THE CRYSTAL PALACE

LONDON PRINTING & PUBLISHING COMPANY

The

Robert E. Gross Collection

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BELGIUM

THE EAGLE SLAYER

SPECIMEN OF IRON CASTING BY THE COALBROOK DALE COMPANY

APOLLO BELVEDERE

FROM THE ORIGINAL IN THE VATICAN

THE CIRCASSIAN SLAVE AT THE MARKET

THE ARCHANGEL MICHAEL HAVING OBTAINED THE VICTORY

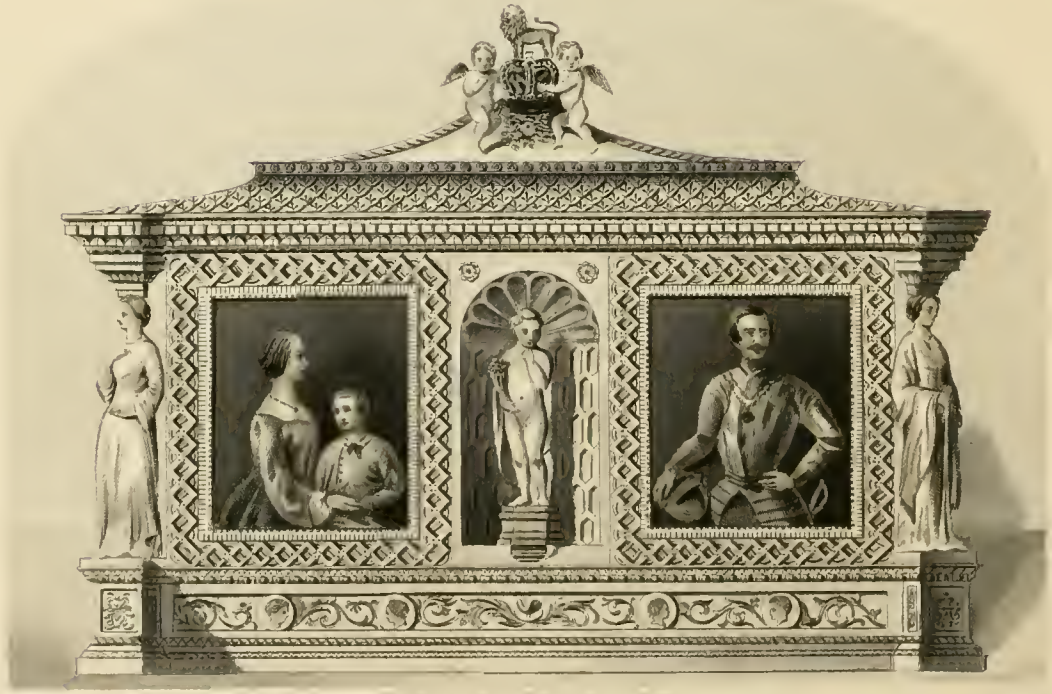
THE ARCHANGEL MICHAEL HAVING OBTAINED THE VICTORY

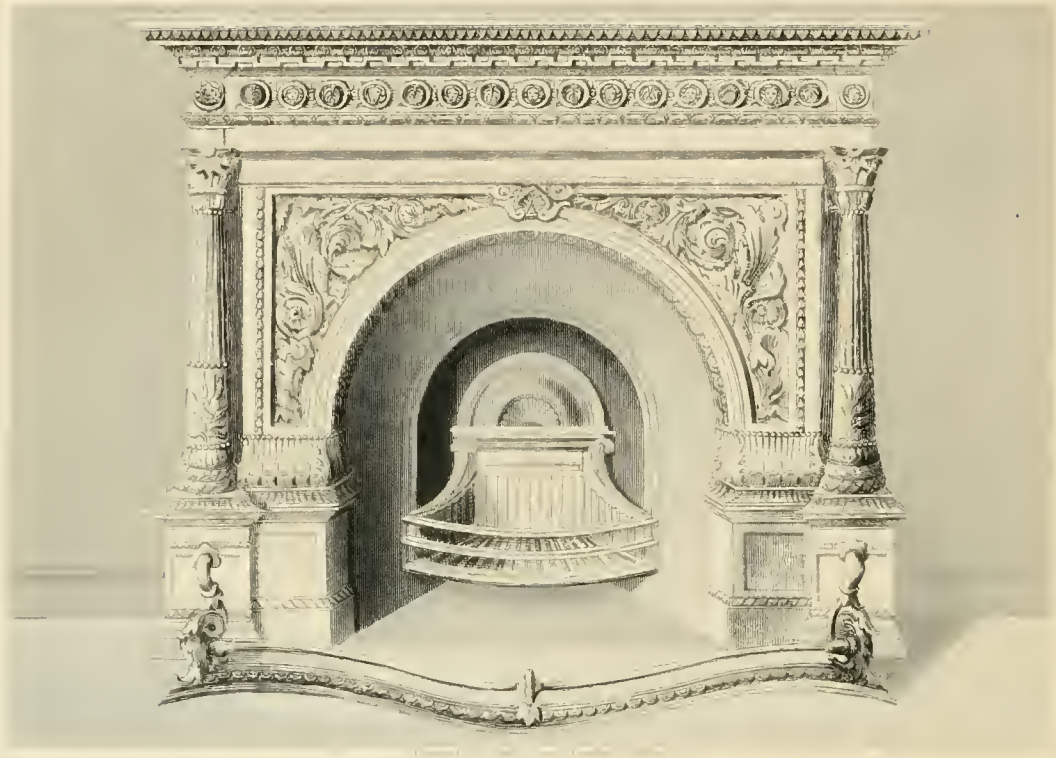
CLARIAFORIAL TABLE

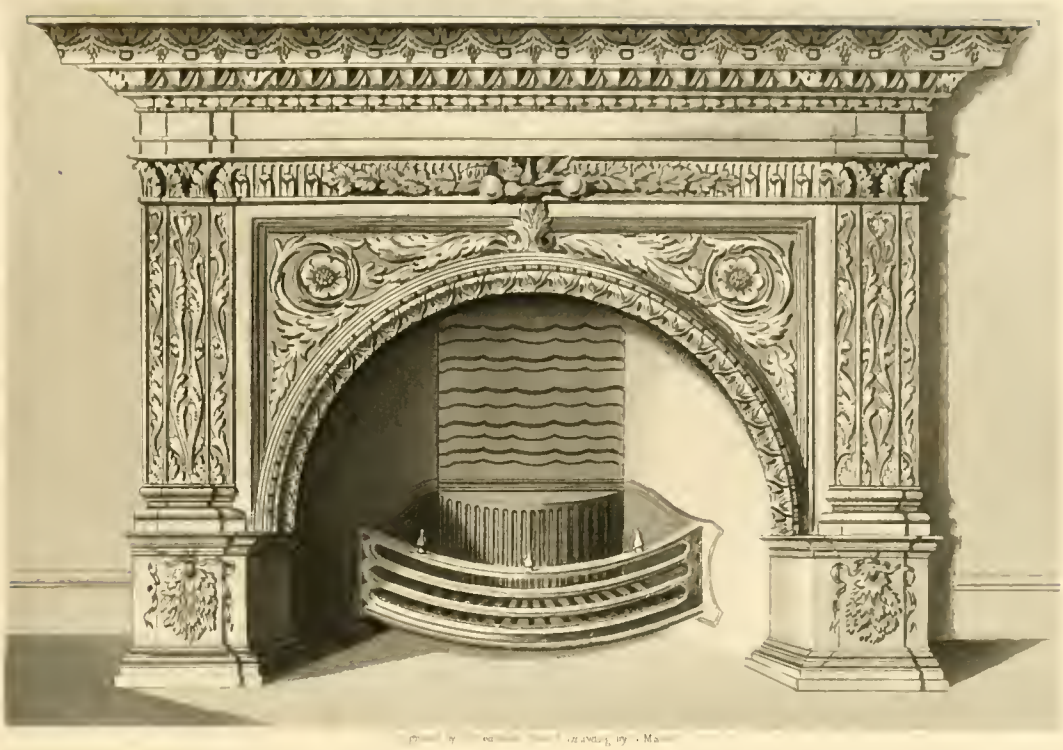
FROM THE ORIGINAL OF [illegible]

THE DANCING FAUN

FROM THE ORIGINAL IN [illegible]







STOVE DESIGNED AND MANUFACTURED BY

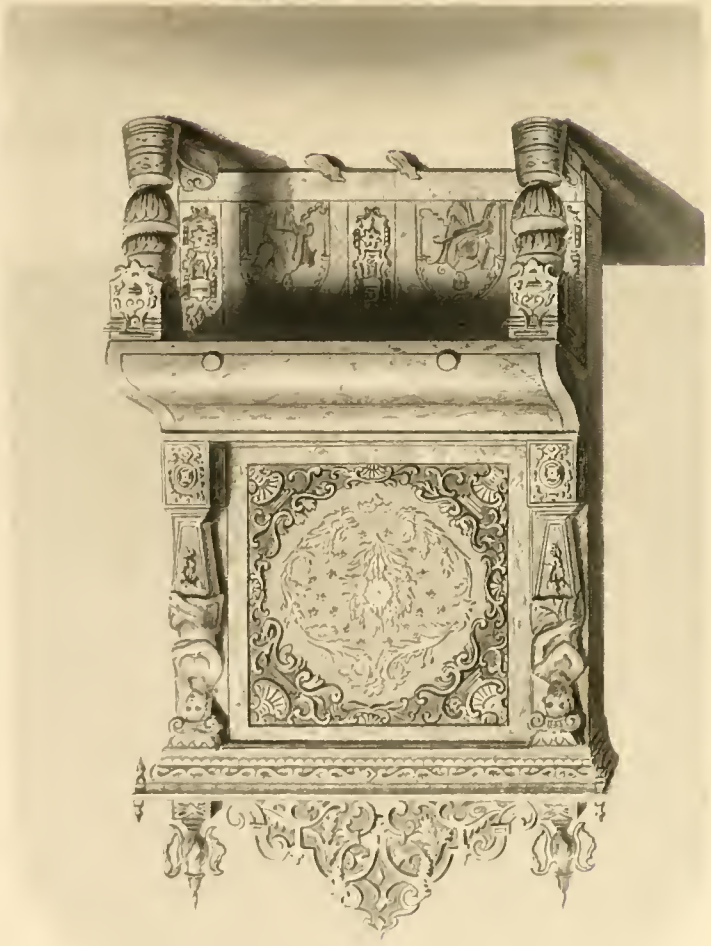
MESSRS. CARR & ROBERTSON, SHEFFIELD.

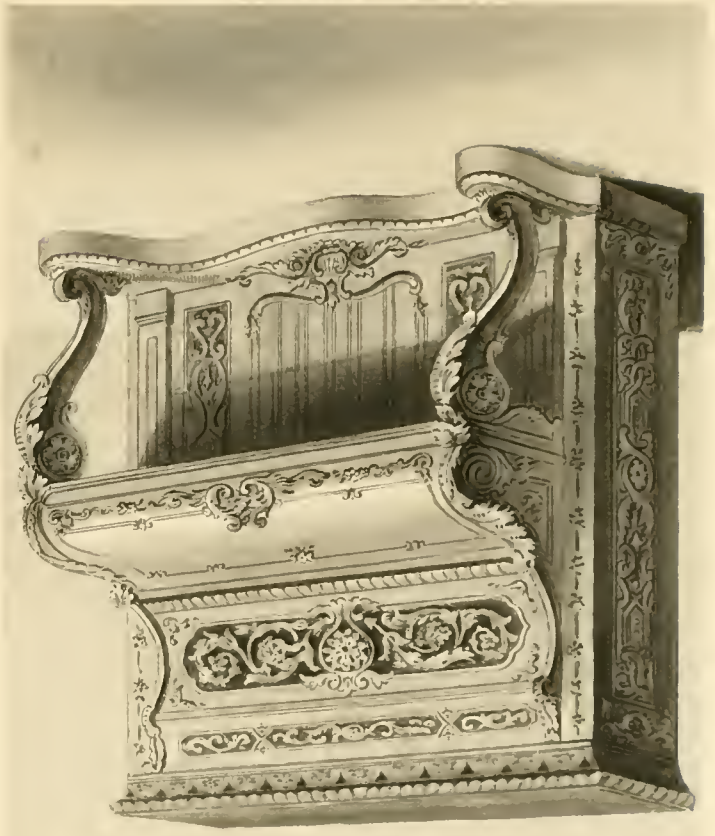
GRATE COTTAGE PIANOFORTE

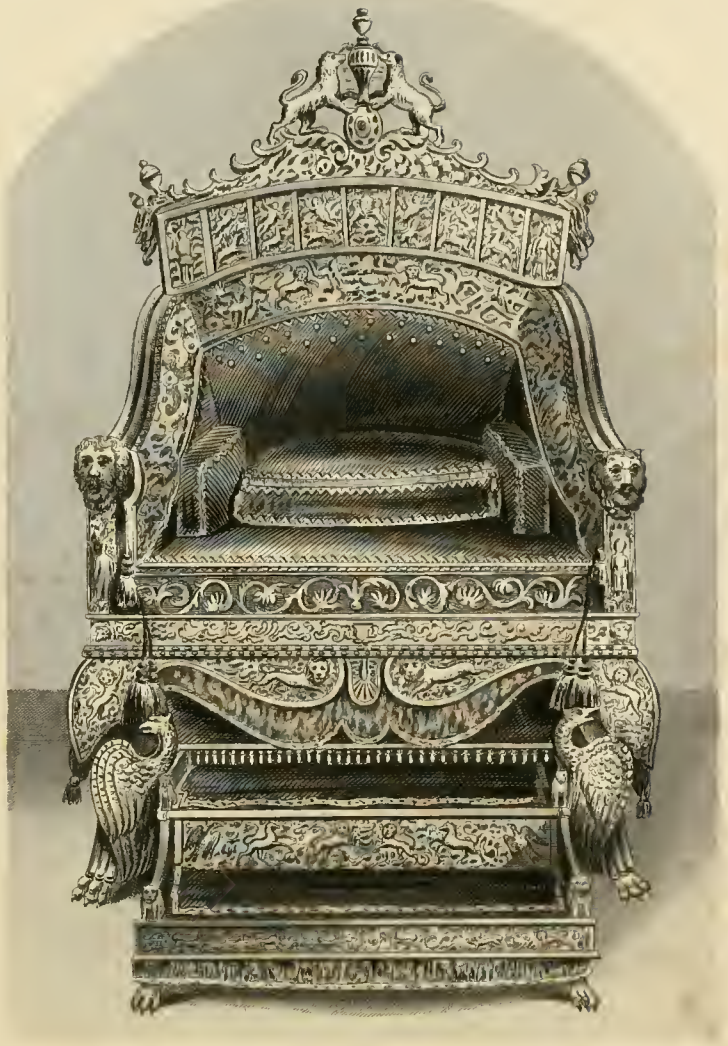
MANUFACTURED BY MOORE &

PIANOFORTE

EXHIBITED & MANUFACTURED BY SOLLARD &



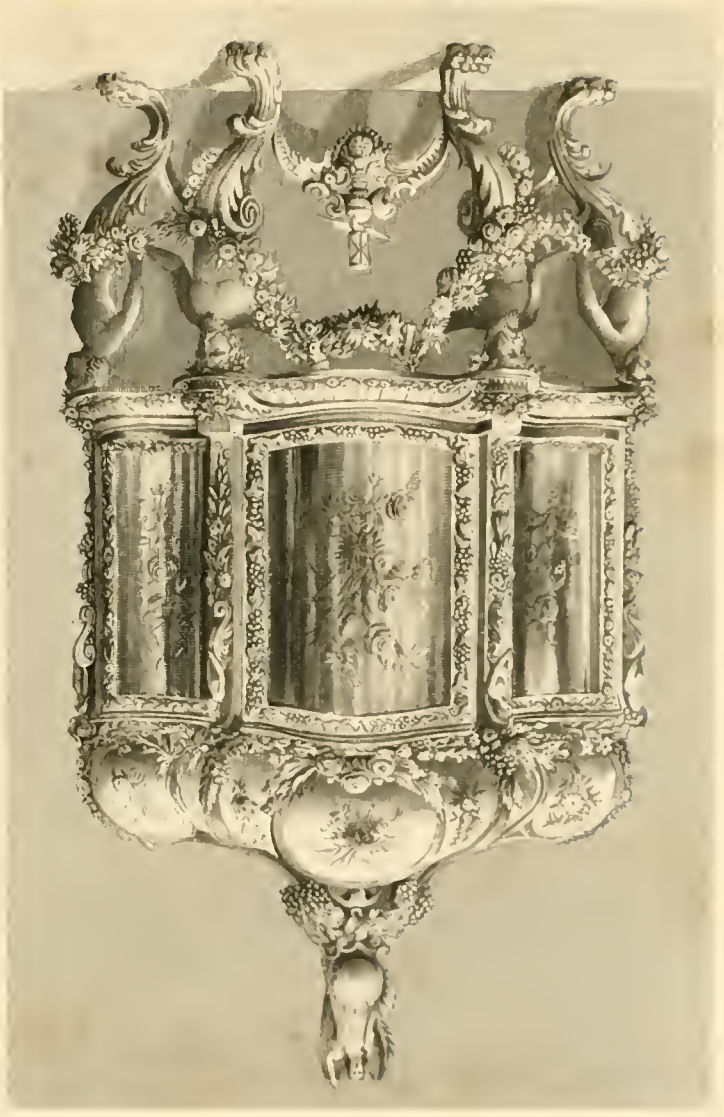




Engraved by Orrin Smith from a Drawing by H Mason

IVORY THRONE

EXHIBITED BY HER MAJESTY



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TALLIS'S HISTORY AND DESCRIPTION

OF

THE CRYSTAL PALACE.

CHAPTER I.

PAPIER MACHE—INVENTED IN FRANCE—INTRODUCED INTO BIRMINGHAM — JENNINGS AND BETTRIDGE—CLAY—BIELEFIELD—METHOD OF PREPARATION—BELL'S "VICTORIA REGIA" COT —ELIZABETHAN CHAIR—OXFORD SPECIMENS BY SPIERS AND SON—EMBOSSED LEATHER—ITS GREAT ANTIQUITY — ANNE BOLEYN'S TOWER — M. DULUD—A. DESPREAUX — LEAKE—PAPER STAINING, HANGINGS, ETC.: HISTORY AND IMPROVEMENT—FRENCH, RUSSIAN, AND ENGLISH EXHIBITORS—MAGNUS'S ENAMELLED SLATE—SCAGLIOLA—MODE OF PREPARATION—DOLAN'S GOTHIC ARCH—ORSI AND ARMANI'S METALLIC LAVA—IMITATIONS OF FLORENTINE MOSAICS.

Among the numerous articles displayed at the Exhibition, there were few which, in their manufactured or finished state, were more attractive to the sight, or which had higher claims to the admiration of the visitor, than those formed of the material known as papier-mâché. Whether in the shape of domestic furniture, to which it has recently been applied, or in articles of general domestic utility, its beauty and agreeableness are equally striking. Indeed, such is the nature of the material—so ductile, so light, and so economical—that it appears adapted for almost universal application. Admitting a polish almost equal to that of glass itself, and receiving colours nearly as bright as those capable of being placed upon canvas, it furnishes a most attractive surface alike to the industrial skill of the humble artisan and to the genius of the artist.

The merit of inventing this beautiful and useful material is claimed by our French neighbours, and the manufacture of the article is carried on to a great extent in Paris; but in the application of this substance to articles of general domestic utility and ornament, it cannot be disputed that we are far ahead at present, not only of France, but of the entire Continent. Indeed, to such an extent is it carried out, that it may almost be considered an industrial art peculiarly our own; and for papier-mâché work Birmingham stands unrivalled. There is an active competition between the English and French work in France itself; indeed, so keenly is the competition felt by our neighbours, that they impose an exceedingly heavy duty upon its importation, amounting almost to a pro-

hibition upon the low-priced articles. The manufacture of papier-mâché articles was, we believe, first introduced into Birmingham by Messrs. Jennings and Bettridge, of Halkin-street, Knightsbridge—their principal manufactory being at Birmingham—about half a century since. At this stage of the manufacture tea-trays only were made. The inventor and patentee of the manufacture of tea-trays in papier-mâché was Mr. Clay, of Birmingham. The firm has, from the commencement, gradually proceeded to develop the capabilities of this material by adapting it to new purposes, until the variety of articles now produced is almost innumerable. Articles of furniture made from it, such as chairs, tables, sofas, cabinets, secretaires, screens, vases, and even pianofortes, were displayed at the Exhibition, with writing-desks, work-boxes, papeteries, inkstands, &c., in almost endless variety of style and decoration.

In addition to these purposes, the material has been applied for scrolls, foliages, cornices, mouldings, and other articles of internal decoration. Saloons and halls are decorated with panels of papier-mâché, in a style which has all the beautiful effects of enamelling; and under ordinary circumstances has been found to be remarkably durable. Admirable specimens of panel-work, formed of this substance, are also to be seen in the saloons of the Europa, Asia, Africa, Hindostan, and Oriental steam-packets; but we question whether the material is adapted to bear the constant wear and tear caused by the jarring and shaking of steam-power and weather combined. Mr. C. Bielefield, of Wellington-street, Strand, has, by his skill and enterprise, done much for the extended use of this material for all kinds of ornamental purposes, whether required for flat surfaces, or in the most elaborate picture and glass frames. In the manufacture of papier-mâché, the paper used is similar in texture to ordinary blotting-paper, but of a grey colour. Prior to using it, it is well saturated with flour and glue, mixed with water, in about equal proportions, and is then laid on the mould of the article intended to be produced. These moulds are of iron, brass, or copper. The mould, coated with the first layer of paper, is then dried at a heat of 90 or 100 degrees Fahr., for twelve hours. A careful smoothing by a file follows, after which another deposit of paper is made. The processes of drying and smoothing are successively repeated with each additional layer of paper, until the article assumes the required strength and thickness, some commodities having been made of six inches in thickness. An ordinary tea-tray, of a quarter of an inch in thickness, takes about thirty sheets of paper, or ten layers. When the newly-formed article is taken from the mould, the several parts are planed, filed, and trimmed, so as to be correct and level. A process of "stoving" next follows, in which the varnish is laid on, and brought to a smooth, hard, and brilliant surface. This completed, the most delicate portion of the manufacture commences. The article is coated with several layers of shell-lac varnish, coloured, which, after being hardened by a heat of 280 degrees, are scraped level with implements of various degrees of smoothness. The different varnishings, with the subsequent operations, are carried on for a period varying from twelve to eighteen days, according to the purpose for which the article is required. The exquisite surface which characterizes the finished goods is a distinguishing feature of this material. It is produced by manual polishing with rotten stone and oil; but the finish of the articles—the peculiar brilliancy which lends such a freshness to the painting—is produced independently of rotten stone or other powder, by the process of "handing" alone. Among the largest exhibitors of this article were Messrs. Jennings and Bettridge, Messrs. Jackson and Son, of Rathbone-place, Messrs. M'Callam and Hodgson, Mr. Lane, and Messrs. Spiers and Son, of Oxford. Among the specimens shown by Messrs. Jennings and Bettridge, is perhaps the most extraordinary article yet produced in this material—a case for a pianoforte, with music-stool and canterbury, designed in the Italian style, and treated with great simplicity of decoration; the only

ornament employed being variously-tinted pearl, the effect of which on the jet-black of the case is very rich, and at the same time exceedingly chaste.

The "Victoria Regia" cot, designed by Mr. J. Bell, sculptor, and highly wrought in gold and colours with emblematical devices, attracted considerable notice, but was not to our taste, the colours being gaudy and cold, and the shape by no means graceful. There were also—A "multum in uno" loo-table on a new principle, combining bagatelle-board, chess, draughts, &c., ornamented with inlaid pearl and gold. A lotus work-table, designed by Mr. Bell, fitted on a new principle, and decorated in a style appropriate to the form. A lady's work-table, of a shape suggested by the celebrated vase of Benvenuto Cellini, richly inlaid with pearl and gilt. "The day-dreamer" chair, designed by Mr. H. Fitz-Cook, and ornamented with figures, flowers, &c., allegorically arranged, had a curious and novel appearance; but saying that, we have said all. The figures, emblematical of sleep, dreams, good and bad, were too fanciful and too large, and the colour, generally, was cold and uncomfortable. A "légère" chair, inlaid with pearl, was remarkable for its light elegance combined with strength. A "Prie-Dieu" chair. A chair, styled Elizabethan, was more properly after the form of the period of William III. Several trays, including the "Pacha's" tray, ornamented in gold and colours, 58 inches in diameter. The contributions of Messrs. Spiers and Son, of Oxford, consisted of tables, cabinets, desks, work-boxes, albums, portfolios, waiters, tea-caddies, &c., ornamented with views of the colleges, public buildings, college gardens, and other objects of interest in the University and its neighbourhood. We noticed in them endeavours after a truer and less meretricious style of ornamentation than usually prevails. As the taste of the Oxford people seems to run in a contrary direction to that of the usual purchasers of this description of goods, this firm has taken up the ornamentation of papier-mâché in a new style. Instead of adopting the usual subjects of birds, flowers, Chinese landscapes, arabesques, or other less pleasing styles, they conceived that picturesque representations of architectural and landscape subjects, treated in an artist-like manner, to which other ornament should be subservient, would be equally interesting to many persons, equally popular, and more conducive to the diffusion of a sound taste. Messrs. Spiers immortalised their native and most learned city in every possible point of view, and upon every possible variety of article. We had Oxford from the fields, and Oxford from the river, Oxford in the streets, Oxford colleges, Oxford halls, Oxford staircases, and Oxford seals. These paintings, which were scattered over desks, tables, secretaires, and work-boxes, were all beautifully executed.

EMBOSSED LEATHER.

The specimens of Embossed, or Relievo Leather, in the Crystal Palace, although exhibited but by three firms, two French and one English, identical in their manufacture and mode of treatment, were of sufficient importance to demand a distinct notice. From all that we can collect in reference to the earliest history of the art, it is clearly to be traced as far back as 900 years before Christ, the British Museum possessing some scraps and pieces of gilt leather straps taken from mummies, upon which are relieved figurements of King Orsokon adoring the god Bhem, and others of Amoun Ra Harsaphes. Italy, Spain, and Flanders, centuries ago, were eminent for their relieved leather, the flat or groundwork of which was usually gilded, silvered, or coloured; and recently Germany, France, and more especially Great Britain, took the lead in this department of art manufacture. An able writer, while dwelling with much gusto upon this subject, says, the distinct relief in which the patterns could be embossed, the brilliancy of colour of which the leather was susceptible, the high burnish which could be given to the gold, the durability, ease of application, and resistance of damp, rendered

the material peculiarly fitted for panels and hangings. It was a warm and gorgeous covering for the walls, affording infinite scope for art, taste, workmanship, and heraldic emblazonment, and the exclusiveness of wealth, and was therefore largely used in the decoration of palaces and baronial halls. At Blenheim, Hinchinbrook House, Norwich Palace, Knockton Hall, at Lord Scarborough's, and in many private collections, leather tapestries are still to be found, preserving the utmost brilliancy of colour and gilding. Some of the leather tapestries at Hinchinbrook, it is said, bore the name of Titian. About 1531, or 1532, Henry VIII. built a manor-house near Eastham Church, in Essex, with a high, square tower, that during her sort of year of probation Anne Boleyn might enjoy the prospect of the Royal Park at Greenwich. This tower had hangings of the most gorgeous gold leather, which remained until fifty years since, when the house coming into the hands of a proprietor with no especial love for the memory of the bluff Harry, nor the sad-hauntings of the fate of Anne Boleyn, nor the old art and workmanship of leather decoration, but a clear perception that in so many yards of gilt leather, there must be some weight of real gold, had the tapestries taken down, sent to the goldsmith's furnace, and some £60 worth of pure gold gathered from the ashes. In the French department, No. 1202, M. Dulud, of Paris, exhibited several pieces of tapestry and ornamental hangings in embossed leather, which appeared identical in subject and the method of their preparation with those of Mr. Leake in the Fine Art Court. He likewise showed two elbow-chairs, lined with embossed leather, and other articles of furniture similarly decorated, amongst which a cabinet was the best, and which served admirably to shew the fitness of leather, where the appearance of elaborate carving is required. Opposite to these was No. 164, A.A. Despreaux, a collection of Venetian leathers of similar pretensions, but differing as widely as possible in their result. The patterns selected as models are well known by us to be very admirably adapted for the purpose; but whether to disguise the original source, or from inefficiency in the operatives, nothing could have been more impotent than the conclusion, and scarcely anything more execrable in taste, than the method in which they were daubed with colour. All drawing, all grace, and all notions of chromatic harmony were cast to the winds. If these in any way resembled the decorated leathers at the period of their decline and ultimate abandonment, we can scarcely wonder at the total extinction of this branch of art manufacture in those countries which were eager to appreciate it in its palmy days. Mr. Leake's (of Warwick-street, Golden-square) collection was in the Fine Art Court. To this exhibitor's perseverance we are indebted for the revival of this branch of art manufacture in this country; and we do but justice in stating, that the models from which he has hitherto made selections are of the very best and most classic styles.

PAPER-STAINING, HANGINGS, ETC.

The following general account of the arts of paper-staining and hanging, is abridged, with slight alteration, from Grant's interesting little volume, *The World and its Workshops*:—The art of paper-staining and paper-hanging has now become one of the most interesting and useful branches of industry, whether viewed in relation to the amount of skilled labour and capital employed, or the elegance, refinement, and convenience which it supplies to our social wants. Paper-hangings are of comparatively modern date, being originally manufactured as a cheap imitation of the rich stuffs and tapestries used by the wealthy and great in the coverings of the walls and wainscotings of their apartments. The French, we believe, were the first to bring them into general use.

Paper-hangings may be divided, for convenience sake, into three branches—the flock, the metal, and the coloured. Each of these appears to have been invented at different times, in imitation of a material then much in vogue, as, for instance, the flock to imitate

the tapestries, the coloured to imitate the gilt leather which the Spaniards brought into general use, and, lastly, the metal, which was intended as an economical substitute for painted decorations. Beckman, in his *History of Inventions*, states that flock paper was first manufactured in England, by one Jerome Lanyer, in the reign of Charles I.; the *Dictionary of Commerce*, of 1723, under the head of *dominoterie*, or marble paper, such as is used by the old bookbinders, gives a minute description of the mode of printing the latter, and cites statutes to regulate the industry, dated 1586, in which rules are given as to what kind of presses are to be used by the *dominotiers*, and prohibiting them, under heavy penalties, from printing with types. Here we catch a glimpse of the keen-eyed vigilance of the Romish church, which dreaded the progress of the Reformation, then spreading fast and far into every region of human thought. From the preceding relation, it is fair to infer that block-printing was first practised in France. It is evident that the art of paper-staining and paper-hanging was carried on in this country to a considerable extent, from the time of Charles I. down to Queen Anne; and its subsequent history may be traced, with comparative accuracy, by the decorations adopted by the nobility and gentry, several of which are still preserved, either on the walls of their apartments, or in the works devoted to the illustration of their mansions. In the year 1712, the tenth of Anne, a duty of $1\frac{3}{4}d.$ per square yard was imposed on the manufacture of stained-paper; and some of the flock-paper, one hundred years old, resembles, in every respect, the modern material. The art of flocking, in fact, was disused, and almost lost, during a period of twenty years, and revived only about sixty years ago. There were formerly three modes in which paper-hangings were manufactured — by printing the outline with blocks, and then colouring by hand, by stencilling, and by blocks alone. The first of these methods is that adopted by the *dominotiers*. The second, stencilling, is performed by cutting out either on paper, leather, or other materials, the pattern to be represented, and then placing this on the proposed ground, and brushing it over with the proper colour. This mode gives an imperfect outline, and is seldom used, except by plasterers, to ornament coloured walls. The third is the mode now almost universally adopted, whereby every colour is applied by a separate block, according to the tints and shadows intended to be represented: but within the last two years a great improvement has been effected in this mode of paper-staining, by using several colours on one block, which is a great saving both in labour and cost, besides producing a more effective article at the same price. The Messrs. Potter, we believe, were the first to introduce this improvement, which has since been successfully followed up by Messrs. Hinchliff, who, on some occasions use as many as twenty-five colours on a single block, the effect of which, upon the labour cost of the article, may easily be conceived. The contributions to the Exhibition, in this branch of industry, were peculiarly rich and diversified; and, as was to be expected, France, if we may be allowed such a metaphor, was the radiant star on the horizon. The specimens of M. Delicourt, Mader Frere, and Genoux, left our manufacturers at a considerable distance, as regarded the highest class of paper-staining.

The papers in the Russian contribution were more curious than effective in style and execution; in almost every respect they were inferior to those from Austria, and much below those of Belgium, France, and England. America, we think, was about upon a par with Russia in this respect. In 1754, Jackson, of Battersea, a manufacturer, published a pamphlet on the invention of printing in chiar'-oscuro, and its application to paper-hangings, which he executed in imitation of the most celebrated classic subjects; and various attempts have since been made in the same path; the last, and one of the boldest, is that of Jeffrey and Allen, who have used what they considered the best portion of the Elgin-frieze, in twenty-four feet of length. Scott, Cuthbertson, and Co.,

showed a simple and handsome Tudor panelling in the eastern gallery. The effect of the gold upon a white ground, as the paper was hung, was necessarily much softer than the drawing would suggest: the border, however complex, was by no means confused; much of this might be owing to the quantities of colour, which, as in their other paper, was a bold attempt at reconciling apparently equally forcible colours. Turner's *cerise* was particularly elegant and lady-like. These patterns excited unusual attention, on account of the precision claimed for the manual labour of printing the blocks. The test is very simple, and the same part of the sheet of paper may receive ten or a dozen blows from the blocks without slipping, or causing a faulty impression. This pattern was a design by Marchand, of Paris. Underneath it were two patterns, which possessed the property of altering their appearance as the eye of the spectator moved, becoming alternately light on a dark ground, and dark on a light ground pattern. This effect of "glancing," as it is now termed, has not been introduced by this house so much as twelve months, and is still a novelty. Townshend, Parker, and Co., had an arabesque paper pattern, quite good enough for hand painting. This certainly was considered the most praiseworthy of this class of productions. Their plain flocks on each side of it gained by the contrast: for their purity and neatness of outline, joined to the solidity of the flocking, were well set off by the general deep tones of the arabesque.

ENAMELLED SLATE.

As we are on the subject of artistic decoration, we shall now direct the attention of our readers to a very interesting manufacture, which, from the various elegant articles exhibited in its department, attracted general attention and admiration. We refer to imitations of costly marbles in slate. So perfectly faithful indeed were these imitations, that foreign visitors especially, could with difficulty be persuaded that they were not the precious materials themselves. On the ground of novelty, enamelled slate stands unrivalled, for, until the last few years, the uses of slate were limited to the roughest purposes. An occasional piece had indeed been smoothed, painted, and varnished in the style of tea-trays, and ornamented with a flower or bird in the Birmingham fashion; but it remained for Mr. Magnus, of Pimlico, to display its full capabilities, who, by means of a new, very simple, and inexpensive process, has succeeded in producing works of great magnitude and importance, calculated to effect the introduction of slate for household purposes on a very extensive scale. The advantages of the material as thus used, consist in its great strength, its lightness, as compared with that of marble, and its adaptability to all kinds of artistic decoration at a small cost. With regard to the strength of slate, it is computed to be about four times that of ordinary stone, and slabs eight feet long and upwards can be very safely used of thicknesses not exceeding half-an-inch. The extreme compactness of the material, and its perfect non-absorbent qualities, render it well adapted as a lining for walls, where it may be placed without even plastering. In this respect it is preferable to any kind of cement. In the decoration, the exact method of laying on the colour is not communicated; but the slate, after being coloured, is exposed for several days to a temperature of from 300 to 500 degrees Fahr., and the colours are thus rendered so permanent, that washstand-tops, and other articles used in hotels for years, have been scarcely injured by wear. In respect also of its peculiarly smooth and perfect surface and fine texture, it is admirably adapted for various ornamental and useful purposes, and grooves, mouldings, &c., are run with great despatch and at small cost by steam power. Among the articles displayed by Mr. Magnus was a bath-room of large dimensions, good design, and great beauty, wholly manufactured of decorated slate, and in which representations of porphyry, lapis lazuli, giallo antico, and other marbles and rare stones, were introduced with a pleasing and

artistic effect. A column and vase of porphyry—a splendid billiard-table, the legs and frame of which, as well as the bed, were of slate; several inlaid table-tops, chimney-pieces, candelabra, &c., served to show the many purposes to which this useful, novel, and interesting invention is applicable. To this exhibitor the jury had no hesitation in awarding a prize medal, in acknowledgment of his admirable and useful contrivances and applications.

SCAGLIOLA.

The name Scagliola is derived from the Italian, where the process is said to have been invented more than two centuries ago, but it is now very extensively used for decorative purposes in England. The material consists of a coating of plaster mixed with alum and colour into a paste, and afterwards beaten on a prepared surface with fragments of marble, &c. It is greatly used as an excellent and economical means of imitating the finer kinds of marble, the material being as hard as marble, very durable, cold to the touch, and taking a perfect polish. The cement is prepared from the finest gypsum, broken up before calcining, and afterwards reduced to a fine powder, and passed through a sieve. It is then mixed with aluminous matter, and isinglass, and also with colouring matter, and is afterwards made up with alum; and, as it is generally made use of only where the more beautiful and veined marbles are to be imitated, as many different colours and shades of colour must be mixed up separately as there are in the kind of marble to be represented. Thus prepared, it is ready to be laid on the surface intended to receive it, which has a rough coating of lime and hair already prepared. The different colours having to be laid on and mixed by the hand, the work somewhat resembles that of the fresco painter, everything depending on the skill of the operator in imitating the style, beauty, and veining of the original. When the cement is laid on and has hardened, the surface is prepared for polishing by rubbing it with pumice-stone, and cleansing with a wet sponge. It is then polished by rubbing, first with tripoli and charcoal, then with felt dipped in tripoli and oil, and lastly with oil alone. A durable lustre is thus obtained equal to that of marble.

Several new specimens of scagliola were exhibited, of great merit and beauty, by various exhibitors, among whom Messrs. Stevens and Son, and Messrs. Francis and Sons, received prize medals. The same mark of distinction was also awarded to Mr. Denis Dolan, of Manchester, for a Gothic Arch of a new kind of scagliola. This arch included a clustered column, with base and capital cast in one piece, the artisan preparing a mould, and pouring into it the outer coat, a marble composition, which is allowed to set before the coarse cement of the interior is added, the latter being so contrived as not to interfere by its expansion with the outer coat, but rather insure the union of the two. This new process of casting scagliola work, and some contrivances in polishing, were noticed by the jury as worthy of consideration.

Messrs. Orsi and Armian exhibited a material called metallic lava, which is a plaster capable of being worked into a variety of patterns and colours, well adapted by its beauty, durability, and cheapness, for floorings and other decorative purposes; amongst which was a table in the Moorish style, which was intended for the then President of the French Republic. Two different kinds of the metallic lava were exhibited, one of which was white and ornamental, admitting of the application of mosaic work, and the other brown, and peculiarly adapted for covering roofs and terraces, lining tanks, cisterns, fish-ponds, brickwalls, stables, &c., where a durable, cheap, and impervious covering is required. Both kinds have stood the test of experience, and are known to be well adapted for the object they are intended for. The composition is patented, and the method of laying down a flooring or terrace without joints is both new and advantageous, insuring the

perfect impermeability of the whole to moisture. A prize medal was awarded to these exhibitors.

To Messrs. Della Valle, Brothers, of Leghorn, a prize medal was also awarded, for a new and peculiar manufacture in scagliola, to a certain extent imitative of works in Florentine mosaic, but applied in cases which would be impossible by that process. The objects exhibited consisted of two tables and a vase, all truly inlaid, and having a striking and very brilliant effect. This kind of manufacture differs from ordinary scagliola in the much greater complication of the process, and also in the greater beauty of the result, as the subject included figures and views, which at first would appear hardly possible to be executed in such material, but which showed great labour and skill, and some artistic knowledge in application. One of the objects, a round table, contained a central tableau, surrounded by an azure zone, with several emblematic ornaments. The table itself was of scagliola on a base of marble, each colour composing the ground, and each figure of the central tableau having been first inlaid in a single piece, and then shaded. The lights also were all inlaid, and the general effect was extremely beautiful. It will be seen that the general principle involved, is that of a mixture of fine inlaying without shading. It would appear, however, that the result, although beautiful, is almost too costly to be generally adopted, as the price of the round table referred to, was stated to be £250. The rectangular table, in imitation of pietra dura, and the vase, which was copied from the antique, showed several difficulties incident to the process very successfully overcome. The polish in all the specimens was very good, and entirely natural, no varnish whatever being used.

M. L. Romoli exhibited a scagliola candelabrum, in imitation of giallo antico, designed by L. Gruner, Esq., modelled by Ant. Trentanove, and the property of his Royal Highness Prince Albert; and also a table of inlaid scagliola. This exhibitor was honourably mentioned as exhibiting excellent workmanship in the elegant and costly applications of the material he employed. The candelabrum was not altogether pleasing in its effect, but the workmanship was good. The inlaid table was something in the style of those exhibited by the Messrs. Della Valle, but not at all equal either in design or execution. It appeared also to have been manufactured in a somewhat different manner. A cement mosaic of wood and marble was sent from the Cape of Good Hope for exhibition.

An excellent imitation of stone, extremely hard, perfectly non-absorbent, and resisting all atmospheric action, was exhibited by Messrs. Ransome and Parsons, of Ipswich. This material is a compound of grains of sand, pebbles, portions of limestone, granite, and similar substances, cemented by a true glass, obtained by dissolving flint in a caustic alkali. Besides the ordinary uses to which stone is applied, a porous variety is manufactured for filter stones, which may be supplied at extremely small cost. The Jury awarded a prize medal to these exhibitors for the improved material they have introduced, and the applications of it they have already made.

CHAPTER II.

TOYS.

THEIR IMPORTANCE — PHILOSOPHICAL AND POLITICAL CHARACTER—AMERICA—AUSTRIA AND ITS EXHIBITORS—BAVARIA—BRITISH COLONIES—FRANCE—TOY TRADE IN PARIS—FRANKFORT —HAMBURG—PRUSSIA—SAXONY—SWITZERLAND—UNITED KINGDOM—VALUE OF TOYS IMPORTED—WURTEMBERG.

If, as the poet tells us, "Men are but children of a larger growth," then we shall need no apology for introducing the subject of "Toys" to the consideration of our readers; especially when we call to mind the remark of one of the most eminent of modern philosophers, viz., that "boys' toys are the most philosophical things in the world;" and that of an equally renowned statesman, who, taking another view of their importance, affirms that they are an index to the character of a nation. Now we beg leave to remark, that it is to the toys of the male sex that the observation of the sage philosopher is solely applicable, inasmuch as they are always directed to the more intellectual quality of the masculine understanding, or to its bellicose propensities; whereas the toys contrived for the amusement of the gentler sex are invariably such as minister to the gentler affections of the heart, to tenderness, to love, and the whole range of domestic virtues. In illustration of the first position, as it is observed in the Report of the Juries, a few examples may be cited. A boy's kite, in the hands of a Franklin and a Romas, has served to identify lightning with electricity, and convey an instructive lesson on the composition of mechanical forces. The pea-shooter not only affords evidence of the elastic force of gases, but also of their economical employment when used expansively. The sucker illustrates the weight of the atmosphere, and its equal pressure in all directions; and the sling, the hoop, and the top, show the property of centrifugal force: when the top is in rapid motion, it converts for the moment, every spot and bruise on its surface into an elegant zone, and thus also imparts a good lesson in physiological optics. To a reflecting mind toys afford ample food for thought, and they might be made, perhaps, to yield much solid instruction to the child, were it not generally far more wise, for a certain period, at least, to limit its inquiries rather to the discovery of the weakest parts of its plaything. With regard to the assertion, that toys indicate the genius of a nation, it is evident that, as the natural tendency of children is to imitate the employments of their elders, they will always take the most interest in such toys as will assist them in this propensity, and lead them in their sports to do that which they see those around them doing in earnest. Hence, in countries which are of a military disposition, flags, drums, trumpets, guns, swords, and the accoutrements of soldiers, are much in demand for the pastime of even the youngest boys. In a maritime nation toy-ships will be esteemed, and thus the very pastimes of childhood might be made available in promoting the welfare of such services as the particular state most requires. The Exhibition, therefore, might have afforded an interesting opportunity to statesmen and philanthropists for studying the diversity of character exemplified by the contributing nations, had they been all as well represented in their toys as they were in their other manufactures. This, however, was far from being the case, many countries, although largely employed in the manufacture of toys, having nearly or altogether neglected sending specimens. AMERICA, for instance, was extremely deficient in her contribution of toys.

AUSTRIA, on the other hand, was well and copiously represented in the toy-trade. From Vienna there were two exhibitors, one of whom sent a great variety of automaton-

toys, and the other a general collection of ordinary toys; military accoutrements, guns, and swords, holding a very prominent position among them, sufficiently indicative of their Haynau and Radetzsky propensities. From Bohemia were sent excellent and very numerous examples of those very beautiful boxes of toys for which it is famous, and which form a large item in the export trade of the country. From the mountains of Tyrol, J. B. Purger contributed numerous specimens of carved white-wood toys, cheap, and of excellent workmanship. The Widow Haller and her Son-in-law, of Vienna, obtained a prize medal for a collection of upwards of three hundred children's toys, comprising dolls, dressed and undressed, miniature furniture, shops, drums, flags, swords, guns, lances, shakos, helmets, and other military accoutrements for children, besides the commoner descriptions of mechanical toys, many of which displayed much ingenuity. There were also numerous other sorts of toys in this collection, which were arranged in the manner of a trophy, and formed the largest group in the Exhibition.

Kietaibl, of Vienna, also received a prize medal for a collection of thirty-nine automaton-toys. These toys, which were all moved by good metallic clock-work, were most ingenious productions, but they appeared to be more expensive than similar manufactures produced in France, with which, unfortunately, the Exhibition afforded no opportunity of comparison. The following were among those deserving of especial notice:—Male and female figures waltzing, the contrivance for effecting the occasional rapid rotation of the German waltz being very ingenious; a pianist, who played, or rather appeared to play, "God save the Queen" and "Rule Britannia;" an elephant carrying a howdah, and four walking Indians carrying a palanquin. This was the only one of detached locomotive figures.

C. A. Muller and Co., of Oberlentensdorf, Bohemia, obtained honourable mention for nearly two hundred boxes of toys. These boxes were filled with excellent figures, representing men and animals, which were modelled in a sort of papier-mâché, with trees and rocks, the former being made of wood and the latter of paper. The different series represented hunting-scenes, zoological gardens, herds of cattle, and numerous other groups illustrative of rural domestic life. The truthful delineation of the various animals is a feature deserving of great commendation, as it renders the toys well adapted to afford instruction as well as amusement.

Bavaria was chiefly remarkable for mechanical and magnetic toys. G. Eichner, of Nuremberg, received a prize medal for twenty mechanical toys. These articles, which were made of tinned iron-plate, and painted, were quite remarkable for the neatness with which they were finished. They consisted chiefly of carriages with horses, the latter being moved by cranks and levers connected with the wheels. A carriage with four horses, the carriage containing figures representing her Majesty and Prince Albert, was worthy of especial notice.

British Colonies.—*British Guiana* sent only a single example. *India*, on the other hand, exhibited a large collection of toys, chiefly from Bengal and Madras. The high antiquity of this manufacture in India will appear from the beautiful Indian drama of *Sacontalá*, written by Calidas, in the first century B.C. "Go, I pray," says an attendant, in Act vii., "to my cottage, where thou wilt find a plaything made for the hermit's child, Sancara; it is a peacock of earthenware, painted with rich colours." Brilliant but rude representations of birds formed the greater part of the display; but there were also some instances of toys which are familiar in England, as the humming-top, the merry-go-round, balancing figures, &c. The collection comprised also several ingenious Malay puzzles, two of which were enclosed in narrow-necked bottles. Figures made in pith were likewise numerous, and were very clever productions. These toys were all such as are in common use in India, on which account they formed a most valuable

contribution to the Great Exhibition; but they were not nearly so well made as those of Europe.

France.—One of the French exhibitors sent two ingenious drawing-room ornaments, containing automaton-birds, which are toys rather for adults than children. Another exhibitor contributed some excellent wax figures for hair-dressers, which are made by processes similar to those employed for producing the best description of dolls, and they were, therefore, enumerated with toys. But although France manufactures enormous quatities of toys of many kinds, only one description of them was sent, and that by a single exhibitor from Paris, who exhibited dressed dolls only. "In that capital alone," according to the *Statistique de l'Industrie à Paris*, says M. Natalis Rondot, "there were, in 1847, no less than 371 manufacturers of children's toys, employing 2,099 workpeople (641 men, 1,345 women, 80 boys, 33 girls), who in that year produced £172,800 worth of goods." The men earn, on an average, 2*s.* 8*d.* per day, and the women 1*s.* 3½*d.* per day; but some of the men earn 2*s.* 9½*d.*, according to their skill, or the description of work they are employed on. Many of the masters employ only a single assistant, or work alone, and very few employ more than ten assistants. Thus, of the 371 manufacturers, only 62 employed more than ten; 142 employed from two to ten; 77 employed one; and 90 employed no assistant, but did all the work with their own hands. Competition has, it appears, brought down prices so low that dressed dolls, including a bonnet, are to be brought for *eightpence per dozen*, and undressed composition dolls at *twopence-halfpenny per dozen*. It was to be regretted that none of the very excellent automaton-toys, boxes of games, of kitchen utensils, &c., found a place in the French department, as they are exported from France to a considerable extent. Swords, guns, helmets, and other military accoutrements, are also, as might be expected, produced in large quantities in that country, but are disposed of chiefly for the home-trade. Most of the toy-guns are beautifully made, and are generally furnished with percussion-locks, which will fire off a cap. Conjuring toys, for adults as well as children, ought most certainly to have been exhibited, as in the manufacture of these articles Paris has no rival.

Bontems, of Paris, received a prize medal for his groups of Humming-birds, with clock-work movements, by which the birds were made to hop from one twig to another, at the same time opening their wings, after which they twirl suddenly round, and hop back again exactly in the manner of real birds confined in a cage. There was also an incessant chirping, apparently kept up by the birds, their beaks being made to move. The levers which carried them backwards and forwards were ingeniously concealed in slits formed in the artificial branches. Other birds were represented continually pecking at beetles. The price of one of these groups of automata was £12, and of the other with the clock, £18. Both groups were under glass-shades, and formed singularly pleasing drawing-room ornaments.

M. P. Jumeau, also of Paris, received a prize medal for dolls' dresses. The dolls on which these dresses were displayed presented no point worthy of commendation, but the dresses themselves were very beautiful productions. Not only were the outer robes accurate representations of the prevailing fashions in ladies' dresses, but the under garments were also in many cases complete fac-similes of those articles of wearing apparel. They might serve as excellent patterns for children to imitate, and thus to acquire the use of the needle, with a knowledge of the arrangement of colours and material; in the latter respect they might, indeed, afford valuable instruction to adults.

Frankfort was chiefly remarkable for the contributions of J. V. Albert, who exhibited, among philosophical apparatus, dolls, and the Moor's head conjuring-toy, which admits of a knife traversing the neck without severing the head. The mechanism by which this was effected, though simple, it would be difficult to explain without a diagram.

Prussia.—The principal toys in the Prussian department were those of pewter from Berlin, by G. Sohlke; the principal example being a representation of the review at Windsor, on the occasion of the visit to England of the Emperor of Russia, who was portrayed among the numerous figures which this well-executed model contained. Besides this specimen, there were several miniature dinner and tea services, also cast in pewter. A. Fleischmann, of Sonnenberg, sent a "Philharmonic Chandelier." This very humorous production represented M. Jullien, in the centre at the top, with the performers of his band seated round the circles of the candelabrum, in a great variety of quaint and expressive attitudes, their features and varied action being portrayed with much skill and humour. The same contributor also exhibited a Comic Chandelier, representing one of the incidents in Swift's celebrated romance, when Gulliver wakes in the country of Lilliput, and finds himself "unable to stir." "As I happened," he continues, "to lie on my back, I found my arms and legs were strongly fastened on each side to the ground, and my hair, which was long and thick, tied down in the same manner. I likewise felt several slender ligatures across my body, from my arm-pits to my thighs." Such an incident afforded ample scope for the imagination of the artist, and he proved himself quite equal to the undertaking. There was much humour evinced in the expression and action of the Lilliputians, some of whom were bold enough to push their inquiries so far as to pry into Gulliver's waistcoat pockets, a piece of temerity which was nigh costing one philosophic-looking individual his life. Others of the natives were, however, far more cautious, and mounted, in fancied security, upon the branches of trees, which Gulliver might have blown down with a breath, where they contented themselves with a more distant view: others, again, preferred trusting to the ground and their own legs, and some were already on the start at the first signs of waking on the part of the man-monster; a few slow, dull-headed individuals, not knowing what was taking place, were climbing up on his body, whilst others were precipitately sliding down; and even the Lilliputian horses seemed to have their presentiment of danger, and were becoming unmanageable.

Saxony contributed but a few toys and busts made in pewter. Yet, in 1846, there were 697 manufacturers of wooden toys, who employed 1,520 workpeople.

Switzerland, so famous for its carved white-wood toys, did not exhibit any of these articles, and therefore might be considered as unrepresented in this branch of manufacture. M. Audemars, however, exhibited a beautiful little pistol, weighing only half a grain, and so small that it required a microscope to bring out its details. When it was magnified about twenty times linear, all the various parts might be distinctly seen, and they then appeared beautifully formed and perfect in their polish. Every part, indeed, was as complete and perfect as it is to be found in an ordinary percussion-pistol, so that the lock acted when the trigger was pulled. T. F. Bautte, of Geneva, received a prize medal for a Paper-weight of gold, the base being ornamented with scenery painted in enamel. From this a stem ascended, and was surmounted with a small casket which opened and closed by means of clock-work. When the cover was turned back, a most beautiful and perfect little bird was discovered, which was apparently singing, and at the same time fluttering its minute wings, and twirling about in different directions. As soon as the song was finished the box closed. The bird was scarcely three quarters of an inch long, yet was most life-like in the details of its construction and its movements, and its warble was perfectly suited in compass to its size. The manufacture of such minute pieces of mechanism is most valuable training for the watchmaker, and they are therefore deserving of encouragement.

United Kingdom.—Considering the vast quantity of toys manufactured in the United Kingdom, the contributions that were exhibited were very inadequate. The only exhibi-

tion of wax dolls that was deserving of notice was one by Augusta Montanari, of Upper Charlotte street, to which a prize medal was awarded. The display of this exhibitor was the most remarkable and beautiful collection of toys in the Great Exhibition. It consisted of a series of dolls representing all ages, from infancy to womanhood, arranged in several family groups, with suitable and elegant model-furniture. These dolls had the hair, eye-lashes, and eyelids separately inserted in the wax, and were, in other respects, modelled with life-like truthfulness. Much skill was also evinced in the variety of expression which was given to these figures in regard of the ages and stations which they were intended to represent. From the prices of these dolls, however, they were adapted rather for the children of the wealthy than for general sale; since the prices of the undressed dolls were from 10*s.* to 105*s.* each; the dressed dolls, which were attired with much taste, were much more expensive, and varied in price according to the richness of the material of which the robes were made. In a small case adjoining that which contained the toys just enumerated, were displayed several rag-dolls, which were very remarkable productions, considering the materials of which they were made. They consisted entirely of textile fabrics, and the dolls, which were intended, and were well adapted for the nursery, were reasonable in price, varying from 6*s.* 6*d.* to 30*s.* per doll, including the dresses. Rocking-horses were exhibited by J. C. Dear; and H. Lucas sent an improvement on the garden-horse, which was made to rock by means of the motion of one of the wheel-axes as the horse was dragged along. A few compressible toys were exhibited, and a variety of automaton and other toys, chiefly foreign, were displayed by A. Bouchet. None of the ordinary strong toys of English manufacture were exhibited, probably on account of the makers of these sorts being generally very poor; for most of the English wooden toys are constructed by chamber-masters, who seldom manufacture goods to order, but, on the contrary, when they have produced a small number, hawk them about from shop to shop, or vend them in the streets. Without capital, and compelled to work almost literally from hand to mouth, they continue to exist only, without any material advance, but making much the same kinds, having the same general degree of merit, one year after another. That this is no exaggeration, must be conceded by every one who will recal to mind the toys of twenty years since, and mentally contrast them with those of the present day. That the progress has been slow, and requires long intervals for comparison to make it apparent, arises from the fact that all the improvements must be made in the few leisure moments of the workmen, who are compelled to labour many hours each day to gain a livelihood, and who, probably, cannot even afford the time to carry out any suggestions which may be made to them. That the poor workman does, nevertheless, endeavour to improve in his productions, is shown by Mr. Dickens, with touching humour, in *The Cricket on the Hearth*, when Caleb is made to say, "You couldn't have the goodness to let me pinch Boxer's tail, mum, for half a moment, could you?" When surprise is expressed at the question, he thus explains his meaning: "Oh, never mind, mum; he mightn't like it, perhaps. There's a small order just come in for barking-dogs, and I should wish to go as close to nature as I could, for sixpence. That's all. Never mind, mum." Dolls'-houses, shops, brewers' drays, waggons, common horses, the body formed of a sort of skittle with a slice cut off on the under side, and four round pins for the legs, are made in large quantities in England. Spades, wheelbarrows, garden-rollers, garden-rakes, skipping-ropes, caoutchouc-balls, tops, kites, and similar toys, are also made in great numbers. Wax or composition dolls are made entirely in England, but wooden dolls are imported, as are also papier-mâché dolls' heads, the bodies only being made in this country.

Wurtemburg.—Immense quantities of toys are manufactured in Wurtemburg, more

particularly on the borders of the Black Forest, and are exported to England, America, and other countries. The contributions in the Exhibition comprised most of the kinds which are manufactured in that country; as, for example, mechanical toys by Rock and Graner, of Biberach, some made of tinned iron-plate, and others in papier-mâché, comprising carriages with horses, which were moved by the revolving parts by means of cranks and links; a water-mill, to be acted upon by real water; a cascade and fountain, in which, also, real water was to be used; a working-model of a pump; collections of kitchen utensils, and numerous other articles. A prize medal was adjudged to these exhibitors. The number of exhibitors from all parts was 51; of these there were 12 holders of a prize medal, 2 who obtained honourable mention, and 37 unrewarded.

Having gone our rounds, and visited nearly all the toy-shops of the several nations who contributed towards furnishing the vast variety of objects of interest exhibited in the Crystal Palace, we will now dismiss the subject, and, opening a fresh chapter, return to the agreeable dissertations of our gifted member of the Institute of France.

CHAPTER III.

LETTERS OF M. BLANQUI—*continued.*

LETTER VI.—SPAIN AND TURKEY—FORMER EXCELLENCE OF SPANISH MANUFACTURES—CLOTHS, VALENTIA SILKS—TOLEDO BLADES—KID GLOVES—A DIGRESSION UPON THE FAIR SEX—MINERAL PRODUCE OF SPAIN—TURKISH SPLENDOUR—GREEK MARBLES AND PIGMENTS—TURKISH CARPETS—BURSA SILKS—QUESTION ON THE CORN LAWS—PRAISE OF COBDEN—VISIT TO A FARM IN LANCASHIRE—SMALL AGRICULTURAL STEAM MACHINES—PATRIARCHAL HABITS—ENLIGHTENMENT OF ENGLISH FARMERS—ABOLITION OF PROTECTION—ABUSES IN THE CUSTOM-HOUSE.

Let us in this letter devote ourselves to Spain and Turkey, at the two extremities of Europe. They are in close proximity at the Exhibition, and resemble each other through their decidedly progressing tendency during the last few years. Turkey and Spain are not, as is generally believed, worn-out countries; on the contrary, they are still in their infancy. The real spirit of progress makes in reality more rapid strides here than in other places, which claim to be enlightenment itself, and which oftener spread conflagration than civilization. I have visited Spain and Turkey a few years ago; I met these nations here again, more advanced than ever in the path which had commenced to open before them; and their products merit serious attention, even when placed in juxtaposition with those of the great industrial regions which at the present moment absorb the attention of the world. Spain has for a long period been a brilliant arena in which the manufacturing arts have shone with a splendour, which is striving to revive. Her manufactories of arms, of silks, of woollen cloths, of gold and silversmith's work, of carpets, have occupied an honourable rank in Europe. Her typography was once greatly renowned. Her workmen possessed a rare merit—that of being original without degenerating into the false taste, which for a while ran through their literature. They have borrowed from Arabian traditions a multitude of useful processes and of charming forms, which they have appropriated with a moderation and an intelligence suitable to their times. They have never been insipid or vulgar, even when the flame of their genius seemed likely to be extinguished beneath the passion of fanaticism. They fell with pride or with sadness, as Castilians are wont to fall, ever ready to rise again, and ever worthy

of respect. Their exhibition in London is not on a very large scale. They have shown themselves almost as indifferent here as they habitually are in their national exhibitions, where they have always appeared in very limited numbers,—whether it be that these new festivals of the material world excite less their enthusiasm than those they were wont to celebrate in their temples, or that the distance may have frightened them in consequence of the bad state of their roads. I have already said that they had sent more raw materials than manufactured goods; I am still of this opinion, and I may add that they have done right. Spain is above all a land rich in natural products; and I shall not be doing her any great injustice in stating that her mines, her marbles, her metals, will in the long run tend more to her honour and profit than her woollen and cotton manufactures. But, for all that, the efforts which she is making to enter upon the path of manufacturing labour, at the keenest moment of the struggle which has been entered upon between the European nations, are not the less worthy of honour.

The productions exhibited by Spain are of very good quality. We have particularly noticed blue and black woollen cloths—especially black—which are manufactured from the best wools of the country, and which can sustain the comparison with the corresponding qualities of foreign manufacture. The silk goods of Valentia have likewise maintained their good name, but they leave a good deal to be desired in point of finish, patterns, and even colours. A trial of black lace embroidered with colours has been less happy: this may be an innovation destined to obtain some success in the colonies. Fine and good samples of sail and cable cloths bear testimony to the resumption of the spinning of yarn, which possesses great elements of prosperity in that country. The Spaniards have exhibited few fire-arms, but what there are, are principally from the manufactory at Toledo, the land of good daggers and flexible swords, which enter the body with the pliancy of the serpent. Some pistol cases, and two cannons—one of bronze, the other of iron—the latter, it is said, forged with the hammer by the Carlists during the civil war—complete their collection of destructive implements, which suffices to show of what they are capable in this description of article. Pray to Heaven that they may use their iron for other purposes! This iron is really excellent, and may vie with that of Sweden. There are also in the Spanish exhibition very fine samples of their kid skins for gloves, which I consider to be the softest in the world, and the most worthy to protect ladies' hands. Why have we not likewise in the Spanish gallery some of their admirable women—of those who excite the enthusiasm of great deeds? The fair visitors of the North are so cold, so formal; they look as if they came out of a Presbyterian chapel! Pardon me this digression, Sir, for the ladies are here in the majority, and one would almost believe that it is out of pure gallantry to them that Englishmen have got up the Exhibition. They are indefatigable. They eat like ogres, at all the refreshment stalls. The detestable fashion of *crinoline*, and even of baskets, which has seized upon them, gives them a really fantastic size, which every day diminishes the space left to move about in. It is even something strange and curious to see this exhibition within the Exhibition; but it proves at least that here the women, through their instruction, take a real share in the progress of industry, and that they seriously occupy themselves about the interests and labours of their husbands.

Thus we may see them eagerly grouped, like manufacturers or *savans*, around raw materials arranged with much order and simplicity in the Spanish gallery. They admire the wools of Estremadura, the silks of Valentia, the lead ores, the marbles, and, above all, the preserved fruits of Malaga. This collection is exceedingly beautiful. It is by means of her inexhaustible mineral wealth that Spain will regain her fortune. She will find within her own bowels wherewithal to feed her children. Mineral wealth is now-a-days the starting-point of all others. When a country possesses iron, lead,

sulphur, and even, if I may judge from very fine samples sent by Galicia, tin and copper, it possesses the essential basis of all manufactures. I hope that the glorious land of Spain may not seek elsewhere, to the detriment of her natural fortune, an artificial fortune based on tariffs and prohibitions, which would not restore her manufactures, but which would restore smuggling, to say nothing of pauperism and its attendant train of evils. We may hope the same for Turkey. Turkey now aspires, with much honour to herself, to be ranked among the civilised nations. The young Sultan is endeavouring honestly to follow the footsteps of his father, and he has found in Rechid-Pacha an enlightened counsellor and a determined auxiliary. It is indisputably to their powerful intervention that the success of the Turkish exhibition is attributable. It is really a remarkable one; and even after having visited the celebrated bazaars of Adrianople, of Constantinople, and of Smyrna, I could hardly have expected to find so much diversity of richness and taste as in the articles which have been sent by the Levant. As I pass, I greet the small exhibition of Greece, where we have recognised the classic marbles of Paros, and the honey of Mount Hymet. The posterity of Homer and Pericles have since cultivated the grapes of Corinth, and now cultivate sponges and meerschaum, the latter—forgive it them, O ye gods!—serving to make pipes! As far as I am concerned, I devote all smokers to the infernal gods. Greece has sent some beautiful black marbles and madders equal to those of Cyprus. Gall nuts and dyers' weeds will ere long become elements of wealth for that country, the friend of France, which has always had our sympathy, and whose progress has probably contributed not a little to that of its former masters.

In giving you an account of the Turkish exhibition, I must commence by saying I have been greatly surprised only to find vulgar carpets, strong and almost unchangeable as are nearly all they make, but of an unhappy choice. The Turkish carpets are probably the articles most adapted for barter which come from that country, and care should have been taken only to exhibit those most remarkable in point of pattern and colour. I should not omit to state that on their importation into France they pay exorbitant duties, and that but for this improper protection, these precious fabrics, the consumption of which is almost nil, and which ought to be immense, would long since have come into very extended use in France. It is the importation of Cashmere shawls which has led to the extensive use of French shawls; it is the importation of Turkish carpets which will extend amongst us the use of French carpets. The Turks have arranged their exhibition with much art. It resembles a beautiful bazaar, lighter and more coquettish than their own, in which the goods are displayed after the Eastern fashion. I will not allude to some attempts at printed calicoes, which must not be encouraged, for they are hideous and unpardonable, owing to the advanced state of this branch of industry in less industrial countries; but their light silk goods, their stuffs embroidered with gold, are worthy of attention, even when compared with the analogous productions of British India. The Turks will do much better to devote themselves entirely to the production of raw materials, and above all, of dye-stuffs. Their Bursa silks have a reputation; their madders, their kermes, their sesamums, their rice, their opium, their copper, their skins, will become articles daily more sought after, and with which the industry of Europe cannot dispense. It is useful for them as well as to ourselves, to tell them that they would take a wrong course in neglecting their natural productions, for which they have a certain market, in the pursuit of a more than doubtful manufacturing progress.

It is such lessons as these that the Universal Exhibition will teach to many people. It will prevent capital from flowing to industrial Utopiæ, to divert them to the safer grounds of agriculture and raw materials. If we wished all to manufacture anything

at any price, we should run the risk of wanting the most indispensable raw materials necessary for production, and to perish either through insufficiency or abundance. The English are at present more dependent upon American cotton than upon their own iron. The most characteristic fact of our civilization is the growth of that mutual dependence of nations which is the soundest guarantee of peace. The Turks may judge from the wants which the Exhibition will have revealed to them, the direction which they should give to their reviving industry.

LETTER VII.

I ran away for a few days from the attractions of the Exhibition to go and study on the spot certain questions to which the economical reforms which have been accomplished in this country impart at the present moment peculiar interest. I was desirous of seeing whether the great display of industrial power which England is making in London at the present moment, and the path of commercial freedom on which she has entered since the memorable league of Cobden, were real or delusive symptoms of her social progress. It appeared to me that it was the duty of a political economist not to trust to appearances only, but to examine for himself whether the English people had really been the gainers by all the commercial reforms which have been the result of so fierce and determined a struggle. Has the abolition of the corn-laws been beneficial or injurious to the cultivators of the soil? Have the workmen gained in prosperity what the agriculturists pretend to have lost? Is free-trade likely to be permanent? What are likely to be its ultimate results?

These are grave questions at the present time—I might say questions of life and death—since upon their solution depends the food of the people, and the tranquillity or disturbance of the state. What a bitter disappointment, besides, to us, if we must place amongst the rank of chimeras and utopiæ the lively hopes which have encouraged us in the war which we wage against the prohibitionists—a thankless strife, in which we have so often to encounter the hatred of some, the indifference of others. Happily, the moment is at hand when that sovereign arbiter called experience will pronounce—indeed, we may say, that that moment has already arrived in England. You shall judge of it, and may your readers give to this important letter all the attention which it merits. The following are the simple facts: some years ago, several English manufacturers, struck by the distress of the labouring classes, endeavoured to trace its causes, and speedily discovered that the taxes on raw materials and on alimentary substances were the principal sources of this distress. Taxation in every shape, and particularly in that of the import duty on corn, deprived workmen of a portion of their wages. It was evident that the state and the great landed proprietors divided the amount, entirely defrayed by the industrial classes, between them. Since that period, Mr. Cobden and his friends—for it is they who have conducted this religious crusade to a successful issue—did not say to the operatives, "Let us upset the government and the institutions of our country—let us drive the Queen from her throne, and let us threaten property;" they quietly said, "Your distress is attributable to the corn-laws; let us repeal the corn-laws:" and the corn-laws were repealed. When they had perceived that this abolition would result in a great increase of the prosperity of the country, the promoters of the reform, convinced that the surest means of giving a fresh impetus to British industry, was to ensure the supply of raw materials at the lowest prices, set about with renewed vigour to propagate the happy idea, and to ensure its triumph: it also, in its turn, has triumphed. Then came the turn of the navigation-laws, whose object was to maintain for the English flag the monopoly of conveyance and of maritime supremacy. These laws have likewise disappeared from the statute book.

At present, Englishmen may purchase their grain wherever they please, without paying duty; and they receive raw materials from every part of the globe without taxes or privilege of flag.

Assuredly never was economical reform more radical than this. It attacked at one fell swoop landed property in its income, the state in its financial resources, and the national susceptibility in its most ticklish points. All this has been accomplished, without firing a shot, by the sole power of right and reason; and by perseverance and patience—those two great virtues, alas! so rare among us. But a fierce resistance during the struggle, and a still stronger reaction after success, were things to be expected. This reaction still continues, particularly amongst the agricultural interest; and at the present moment it is complicated by the extreme depreciation in the price of corn. It was, therefore, of great importance to go to the fountain-head, to study this new fact worthy of attention. I went, in company with my learned friend, Michael Chevelier, professor of political economy in the college of France, to one of the most remarkable farms in Lancashire, managed by one of the most distinguished farmers in England. We have found this able agriculturalist firm as a rock in his belief of the future prosperity of agriculture. He only considered the present low price of grain as accidental, owing either to the general abundance of corn throughout Europe, or to other transient causes foreign to the new commercial legislation. He admitted that this reform compelled him to modify his cultivation; and that he had discovered a new mine of wealth in the multiplication of pigs, of which we counted between four and five hundred on his farm. Instead of producing corn, Mr. W—— produced meat; and he did not doubt that the abolition of the corn-laws would open the eyes of a great number of farmers who had slept for so many years on the pillow of protection.

Here the cultivators of the soil might see the difference between their venerable immoveableness and the application of science to agriculture. I had been very much struck, in the Great Industrial Exhibition, with the singular variety of the English agricultural implements, the greater part of which are even unknown to us by name in France. My colleague and myself had had often explained to us to what uses, for instance, might be devoted pretty small agricultural steam-engines of five or six horse-power. We know it now. During the whole of our route we have seen several of these machines in the farm-yards of the villages. They serve to thrash the corn, to chop the grass for the cattle; they are used for ploughing, by being stationed in various parts of the fields, from which they put the ploughs in motion. Mr. W—— does not despair of applying them to a number of other uses; and he was kind enough to put in motion before us two models of machines intended to weed and spade by steam. The latter is really exceedingly ingenious: it is impossible to imitate with greater precision the movement of a man's arms. "Before long," said Mr. W——, "all England will be spaded and raked like my garden."

In order to understand the justness and the probable realisation of this idea, it suffices to observe with some attention the manners of the people of this country. The farmer whose hospitality we enjoyed possesses three thousand acres of land, and lives with a simplicity which is not without grandeur. He lives on the land which he cultivates, he looks after it, and animates all with his example. He causes the smallest portion of solid or liquid manure to be collected with the utmost care. He visits the styes of his numerous pigs, looks after their health, and attends to all their wants. They are his California. Fifteen months suffice to see these useful animals, which yield enormous profits to his farm, born and die. We were greatly surprised at meal-times to see all the male and female domestics coming into the room carrying a wooden bench, which was placed facing the arm-chair of the master of the house

and his family. Mr. W——, seated in his arm-chair, then opened the Bible, out of which some chapter was read, and then all kneeled together. After prayer the domestics took their form with them, and the family commenced their meal. Every one here respects his fellow-man—the masters their servants, and the servants their masters. There is neither familiarity nor haughtiness. On all hands there is little talk, but a great deal of business. Mr. W—— conducted us across the fields over all his grounds. Would that your agricultural friends could make this journey! Here they would see what agriculture is; what an admirable, methodical, and analytical art, replete with charms, agriculture is; how the soil is kept free from extreme wet and extreme drought by means of drainage; how the pulverable manures, such as guano, are deposited by a machine around each grain of corn which is sown in the ground; how the fodder is pressed to avoid fermentation; how hay and straw are mixed, &c. &c. Over immense surfaces of ground, all the plots devoted to special culture are enclosed in; everywhere there are small wooden or iron barriers, well closed by means of ingenious and economical latches; double-sided mangers, racks, stables, cattle-sheds, and dairies, of admirable cleanliness, the windows of which are cleaned every day. People *condescend* to reside here, sir; they know how to draw profit and happiness from the fields, and the fields are not unjust. The truth is, with us Paris is everything; we are nailed to it by the two most irresistible influences—those of politics and of women—may heaven forgive them! But I trust there are yet good days in store for agriculture, and that the republic will render the residence of towns so hateful, that we shall be compelled to go for peace and soft emotions to the country.

Another trait of English manners is, that the greater part of the men who are engaged in agricultural pursuits are generally instructed and enlightened in all matters of political economy. Mr. W—— possesses not only a rare collection of agricultural implements, but also an excellent library. All the farmers in this country are acquainted with the progress of chemistry or botany, of mechanical science, and of horticulture. They will therefore have less difficulty in emerging from the torpor in which the corn-laws have plunged them, inasmuch as they will only have to bring forward in the present reign of competition that knowledge which, under the past reign of protection, they suffered too often to slumber. The inevitable results of the abolition of the corn-laws would appear to be further applications of science to agriculture, or a diminution in the rents of the landed proprietors. That portion of the rents, which was levied by means of the corn-law upon the wages of the operative, will be reduced, to the benefit of the farmer; and perhaps the latter, discovering new processes to augment the profits derived from the land, will be able to pay the same rent as heretofore. In that case, nobody would be a loser by the change, and the benefits of cheap living would be opened to the working classes without diminution in the incomes of the landlords. Mr. W—— expressed the idea ingeniously by saying, "We shall turn our land and our brains to better account, that's all; and it is free-trade which will have accomplished the prodigies." Thus, experience proves every day that the abolition of the bread tax will only further have developed the productive powers of this country. The working classes who have become larger consumers, owing to their ability of living cheaply, react on agricultural productions by larger demands. They consume more meat, cheese, milk, butter, vegetables, simply for the reason that they can buy their bread cheaper. In future, only a portion of the corn will be drawn from foreign sources, in exchange for English goods, and England will supply the remainder. Do not laugh at these vulgar expressions and material details—humanity *lives upon good soup, and not on fine words*, even according to Molière, and the prohibitionists would be only too glad to put us on bread and water, if they found it to their interest to do so.

You may, therefore, consider it as a certainty that the cause of freedom of commerce is permanently won in England, and that all the attempts of the protectionist system will not prevail against it. There remain doubtless some abuses to be destroyed in the customs' department; and it is a notorious fact that the vexations habits of this regime have survived the liberal modifications of the new English commercial policy; but the house of commons has appointed a committee of inquiry to put an end to them, and I have been given to understand, by the chairman of this committee himself, that this inquiry will be conducted in the most liberal spirit. The scandalous reign of espionage, of searching the person, of breaking open packages, of impertinent curiosity, is well nigh drawing to a close. These acts of plunder, known under the name of pre-emption, of seizures, of rewards to informers, will ere long cease to dishonour the legislation of nations, to go and join all other seignorial rights. It is time that a vessel running on our coast—that a father returning to his family—that a merchant who brings wealth to his country—shall cease to be received by armed tax-gatherers, who are permitted to pry into the most secret parts of our baggage. Only think, sir, that we suffer these outrages for such a length of time—not in the interest of the state, which has a right to all our sacrifices, but simply for the purpose of ensuring to some bigoted manufacturers the faculty of selling us their goods without competition.

There is only one opinion in Liverpool against these remains of commercial barbarism, and nevertheless the custom-house regulations are less vexatious there than in our ports. The ardent life of commerce will no longer tolerate these trammels of the past. There arrive at Liverpool about a hundred vessels daily from all parts of the globe; there are always five or six hundred loading. The railways send forth with the rapidity of lightning in every direction trains loaded with passengers, and I close this letter at a distance of ninety leagues from London, where I should be in five hours did I not intend to stop a day at Manchester. What can be opposed to such torrents? The present customs system will disappear; not because it is absurd, but because it is impossible. My honourable colleague of the Institute, M. Léon Faucher, Minister of the Interior, has first delivered us from the tyranny of passports. Should he become minister of finance, he will have a fine opportunity to put an end to the custom-house abuses. It would suffice to make his name go down gloriously to posterity.

CHAPTER IV.

FURS AND FEATHERS.

REMARKS ON DRESS—ANTIQUITY OF FUR-CLOTHING—NICHOLAY AND SON—ORIGIN OF THE FUR-TRADE—HUDSON'S BAY COMPANY—ITS VAST TERRITORY—THE NORTH-WEST TRADER—THE INDIAN HUNTER—GREAT VARIETY OF FUR-CLAD ANIMALS—NUMBER OF EXHIBITORS OF FURS—NORTH AMERICA—THE ARCTIC REGIONS—EUROPEAN FURS—TROPICAL SPECIMENS—FEATHERS—MESSRS. ADCOCK AND CO.—OSTRICH FEATHERS—THE MARABOUT STORK—THE GREBE—EIDER-DOWN—SWAN'S-DOWN—GOOSE-DOWN—THE DUCK-BILLED PLATYPUS—CAPE BIRDS—HERON PLUMES—BIRD OF PARADISE FEATHERS.

Personal attire, or dress, has always been held in high estimation in all countries, and among all classes of people. From the rude savage to the polished denizen of the modern drawing-room, all own its influence and all pay obedience to its laws.

Nature herself, indeed, furnishes us with an excuse for doing so, in the gay and rich attire which she has so lavishly bestowed upon the various objects of her care, "the lilies toil not, neither do they spin;" the birds of the air and the beasts of the field receive from the same bounteous hand their rich and appropriate clothing. Why therefore should not man imitate the example before him, and in his dress endeavour to unite the qualities of grace and beauty with those of mere utility and convenience? It is only when the love of dress amounts to a passion, as we are afraid it sometimes does in the bosoms of the fairer portion of our race, the gentle partners of our firesides, that we would deprecate its influence. Pope presents us with a glowing description of one of these votaries of fashion, in his celebrated *Rape of the Lock*, which we shall quote for the edification, but by no means for the imitation of our fair readers—

"And now unveiled the toilet stands displayed,
Each silver vase in mystic order laid.
First robed in white, the nymph intent, adores,
With head uncovered, the cosmetic powers.
A heavenly image in the glass appears,—
To that she bends, to that her eyes she rears,
Th' inferior priestess, at her altar's side,
Trembling, begins the sacred rites of pride:
Unnumbered treasures ope at once, and here
The various offerings of the world appear;
From each she nicely culls with curious toil,
And decks the goddess with the glittering spoil.
This casket India's glowing gems unlocks,
And all Arabia breathes from yonder box."

But we must terminate our exordium, and introduce our readers to the subject-matter of the present chapter, which, as stated at the commencement, is relative to fur, and chiefly as an article of dress.

As an article of clothing, the fur of animals was naturally and necessarily the very earliest in use among mankind; and we find that our first parents, when driven out of Paradise, had garments made of the skins of beasts. We next read of their use in the adorning of the holy temple; the goat skins dyed red, and the badger skins being particularly pointed out. The Persians, Greeks, and Romans were familiar with the use of furs as articles of clothing and trophies of victory, and imputed in many instances similar customs and usages to their numerous fabled deities and heroes. Equally ancient was the use of the dressed skins of animals amongst the Assyrians, as is proved by the representations on the recently-discovered interesting and valuable sculptures lately rescued from oblivion, and bringing again to light the records of a great nation and mighty people, whose history otherwise might have been lost to us for ever. When we refer to more modern times, we find that the regal miniver encircles the royal diadem and composes the mantle by which the sovereign on state occasions is distinguished, and that the various degrees in rank of our nobility are also known by the heraldic arrangements of the ermine worn by them on their robes of state. In like manner the sable is used, according to the rank, to adorn the official dresses of our civic magistrates. The ermine, again, emblem in the olden time of purity, is worn by the judges, and was, possibly for that reason, chosen as the adornment of their magisterial vestments. The rude Laplander, the uncultivated Esquimaux, and the wild Indian, in their several remote and inhospitable regions, have several marks of distinction peculiar to themselves.

Perhaps the most attractive, and certainly the most artistically arranged collection of furs in the Great Exhibition was that shown by the Messrs. Nicholay and Son, of Oxford-street. Messrs. Nicholay exhibited specimens of almost every variety of fur adapted to male and female habiliment. The beautiful lustre of the seal-skin, dyed and

undyed, was shown to advantage in mantles, *pardessus*, children's dresses, bonnets, coats, and waistcoats—the latter invaluable for winter wear, as a preservation against bronchial affections. In the case of these latter, as in that of the buffalo-skin railway-wrapper, great durability compensates for a trifling increased outlay in the first instance. The historical miniver may be seen in a great variety of muffs and tippets, with spots made with the paws of the Astracan lamb, to suit the requirements of modern taste. A very curious article in this valuable collection was a coat from the hide of a Tartar colt, but so carefully dressed as to be as soft as seal-skin, and, from the fineness and density of the hair, completely impervious to wet. It is not a little curious to find the skin in which a wild Tartar colt once scampered over his native steppes serving, perhaps, as a paletot to some tranquil commercial gentleman economically travelling in an English second-class railway-carriage. The beaver was also exhibited in a great variety of ladies' articles. Formerly the use of this fur in the manufacture of hats rendered it so dear, as to make it quite unapproachable for any other purpose; but since the great "gossamer" revolution, the market has become much more easy, and the manufacture has been in a great measure handed over to the furrier. It dresses beautifully, has fine colour and lustre, and the density of the pile gives it a very rich and costly appearance. But it is not only the skins of wild animals alone that the furrier applies to the purposes of his trade. In this collection were exhibited some beautiful articles in the skin of the grebe, a wild duck found near the lake of Geneva, and a very costly and beautiful suit made from the feathers of the egret, a small bird, and so rare and expensive as only to be attainable by royal wearers. This costly collection was completed by various specimens of wolves, tigers, &c., carefully stuffed, and adding greatly to the attractiveness of the stand. Her Majesty visited Mr. Nicholay's stand more than once, and commended many of the articles. A visit to that portion of the nave in which the British fur-trade arranged its wares must have convinced the most sceptical that our English furriers, having the command of the best market for the selection of skins, have also attained the greatest perfection in dressing these costly and beautiful articles of costume. It may be necessary to remind the reader, that the greater portion of the more costly furs is supplied by the Hudson's Bay Company and the North American Company, both of which have their hunting-grounds in the most northern part of the American continent, and who bring the produce to London, where, on sales occurring twice or three times a-year, the furriers of the whole world, Russia among the rest, supply themselves; and it is but reasonable to suppose that the London furriers, residing on the spot, and having the wealthiest people in the world for their customers, would not be behind any in the preparation of articles of the greatest costliness and beauty. To prove that such is actually the fact, it is only necessary to examine the specimens of the skins of almost every animal, from the royal lion and Bengal tiger down to the domestic rabbit, from which the fur section in the Crystal Palace was profusely filled. The greatest show in quantity, and surpassed by none in quality, was that of Messrs. Nicholay, who hung the whole front of the gallery with the skins of lions, tigers, bears, wolves, and foxes, dressed to a beautiful softness, and adapted to a modern exigency by being formed into open carriage, sleigh, and railway wrappers. It appears that they surpass all other articles of that description in warmth and comfort, and, although considerably more expensive than woollen wrappers in the first instance, yet, from their great durability, they become eventually the most economical wrapper for any one who travels much by open carriage or rail. Several specimens of the royal ermine were to be found in Messrs. Nicholay's stall. In the reign of Edward III. ermine and lettice were forbidden to be worn by civilians, and other expensive furs were permitted only to knights and ladies whose incomes exceeded four hundred marks annually. Richard III. and his queen, Anne,

rode from the Tower to Westminster in robes of velvet, faced with ermine, on the day of their coronation.

The fur trade between Europe and America commenced early in the seventeenth century, and was carried on by the early French emigrants. Quebec and Montreal were at first trading posts. The trade was then, as now, a barter of guns, cloth, ammunition, &c., for the beaver and other furs collected by the natives, and was effected by the intervention of the *voyageurs, engagés,* or *coureurs des bois.* These men carried burdens on their backs to the Indian camps, and exchanged their wares for peltries, with which they returned in the same manner. Shortly after the discovery of the Mississippi, permanent houses, and in many places stockade forts, were built, and men of capital engaged in the trade. Detroit, Mackinac, and Green Bay, were settled in this manner. In 1670, shortly after the restoration of Charles II., that monarch granted to Prince Rupert and others, a charter, empowering them to trade, exclusively, with the aborigines in and about Hudson's Bay. A company, then and after called the Hudson's Bay Company, was formed in consequence. The trade was then more lucrative than at present. In the winter of 1783–4, another company was formed at Montreal, called the North-West Fur Company, which disputed the right of the Hudson's Bay, and actively opposed it. The Earl of Selkirk was at that time at the head of the Hudson's Bay, and conceived the plan of planting a colony on the Red River of Lake Winnepeg. Of this colony the North-West Company was suspicious. In consequence of this, and the evil feelings naturally growing out of a contrariety of interest, a war ensued between the servants of the parties, and a loose was given to outrage and barbarity. Wearied, at last, in 1821 the companies united, and are now known by the name of the Hudson's Bay Fur Company. The colony established by Lord Selkirk soon broke up, the settlers going to the United States. Few are aware of the extent of the territory of the Hudson's Bay Company. It covers one-eighth of the habitable globe. Russia comes next in order of importance in this respect, but the race of animals is different.

Of all who have traded with the aborigines, the French were the most popular and successful. They did, and still do, conform to the manners and feelings of the Indians better than the English and Americans ever could. Most of the persons now engaged in the fur trade, in the region north of the Missouri, are French; and they are much esteemed by the natives, with whom they frequently intermarry. The male offspring of these alliances are commonly employed as interpreters, *engagés,* &c. They are handsome, athletic men. Mixing the blood seems to improve the races. The Indian trade on the great lakes and the Upper Mississippi, with its branches, has long been in possession of the North American Fur Company, the principal directors of which are in the city of New York. In the year 1822 a new company, entitled the Columbian Fur Company, was organised to trade on the St. Peter's and Mississippi. It was projected by three individuals, who had been thrown out of employment by the union of the Hudson's Bay and North-west, as before-mentioned. Its operations soon extended to the Missouri, whither its members went from the sources of the St. Peter's, with carts and waggons, drawn by dogs. When it had, after three years' opposition, obtained a secure footing in the country, it joined with the North American. There was another company on the Missouri at the same time. Furs were also obtained from the Upper Missouri and the Rocky Mountains as follows: Large bodies of men (under the pretence of trading with Indians, to avoid the provisions of the law,) were sent from St. Louis, provided with traps, guns, and all things necessary to hunters and trappers. They travelled in bodies of from 50 to 200, by way of security against the attacks of the savages, till they arrived at the place of their destination, when they separated, and pursued the fur-clad animals singly, or in small parties. When their object was effected, they assembled with their

peltry, and descended the Missouri. They did not always invade the privileges of the natives with impunity, but sometimes suffered severely in life and property. This system still continues, and its operatives form a distinct class in the state of Missouri. The articles used in the Indian trade are chiefly these: coarse blue and red cloth and fine scarlet, guns, knives, blankets, traps, coarse cottons, powder and ball, hoes, hatchets, beads, vermillion, ribbons, kettles, &c.

The course of a trader in the North-west is this: He starts from Michilimackinac, or St. Louis, late in the summer, with a Mackinac boat, laden with goods. He takes with him an interpreter, commonly a half breed, and four or five *engagés*. On his arrival at his wintering ground, his men build a store for the goods, an apartment for him, and another for themselves. These buildings are of rough logs, plastered with mud, and roofed with ash or linden slabs. The chimneys are of clay. Though rude in appearance, there is much comfort in them. This done, the trader gives a great portion of his merchandise to the Indians on credit. It is expected that the debtor will pay in the following spring, though, as many neglect this part of the business, the trader is compelled to rate his goods very high. Thus the honest pay for the dishonest. Ardent spirits were never much used among the remote tribes. It is only on the frontier, in the immediate vicinity of the white settlers, that the Indians get enough to do them physical injury, though in the interior the traders, in the heat of opposition, employ strong liquors to induce the savages to commit outrage, or to defraud their creditors. By this means the moral principle of the aborigines is overcome, and often destroyed. Spirit is commonly introduced into their country in the form of high wines, they being less bulky, and easier of transportation than liquors of lower proof. Indians, after having once tasted, become extravagantly fond of them, and will make any sacrifice, or commit any crime, to obtain them. Those Indians who have substituted articles of European manufacture, for their primitive arms and vestments, are wholly dependent on the whites for the means of life, and an embargo on the trade is the greatest evil that can befal them. It is not going too far to say that the fur trade demoralises all engaged in it. The way in which it operates on the Indians has been already partially explained. As to the traders, they are, generally, ignorant men, in whose breasts interest overcomes religion and morals. As they are beyond the reach of the law (at least in the remote regions), they disregard it, and often commit or instigate actions that they would blush to avow in civilised society. In consequence of the fur trade, the buffalo has receded hundreds of miles beyond his former haunts. Formerly, an Indian killed a buffalo, made garments of the skin, and fed on the flesh while it lasted. Now, he finds that a blanket is lighter and more convenient than the buffalo robe, and kills two or three animals, with whose skins he may purchase it. To procure a gun, he must kill ten. The same cause operates to destroy the other animals. Some few tribes, the Ottaways, for example, hunt on the different parts of their domains alternately, and so preserve the game. But by far the greater part of the aborigines have no such regulation. The fur-clad animals are now to be found in abundance only in the far north, where the rigour of the climate and the difficulty of transportation prevent the free access of the traders, and on the Upper Missouri, and towards the Rocky Mountains.

The first proposal as to the exhibition of furs was, that it should be a joint affair amongst the merchants, wholesale dealers, and retailers—a shape in which (although four of the leading houses in the trade contributed to the great case in the centre of the western nave, which went by the name of the Fur Trophy) the project did not get carried out; the wholesale dealers at first hanging back, under the impression that though furs might be shown of every class, and in every stage of finish, they scarce sufficiently formed an article of manufacture for exhibition: finally, however, nearly all

dropped in, it being felt that a branch of trade occupying so large an amount of capital, and employing such a number of hands, should be fairly represented; and, therefore, in the wholesale trade, Messrs. George Smith and Sons, of Watling-street; Robert Clark and Sons, Cheapside; Bevingtons and Morris, King William-street; Lutze and Co., King Edward-street; Myer and Co., Bow-lane; and George Ellis, Fore-street; and in the retail, Nicholay and Son, Oxford-street; R. Drake, Piccadilly; Ince and Son, Oxford-street, became exhibitors in the common case or in spaces of their own. The skins and furs from the Arctic regions, sent by the Hudson's Bay Company, selected from their importation of 1851, and prepared and arranged by Messrs. J. A. Nicholay and Son, her Majesty's furriers, were of great value, beauty, and interest. The groups of the varieties of foxes included the black, silver, cross, red, blue, white, and kitt. The black and silver fox is the most valuable of this tribe —a single skin bringing from ten to forty guineas; they are generally purchased for the Russian and Chinese markets, being highly prized in those countries. The cross and red fox are used by the Chinese, Greeks, Persians, &c., for cloak linings and for trimming their dresses. The white and blue fox are used in this and other countries for ladies' wear. In the sumptuary laws passed in the reign of Henry III. the fox is named, with other furs, as being then in use. It has been stated that the fox in the Arctic regions changes the colour of its fur with the change of the seasons. Such however is, we believe, not the case, with the exception of the white fox, which is in winter a pure white, and in summer of a greyish tint. Among other groups shown were beautiful specimens of the otter (*Lutra Canadensis*). The Hudson's Bay, North American, and European otters are chiefly exported for the use of the Russians, Chinese, and Greeks, for caps, collars, trimmings, robes, &c. It may not be uninteresting to state, that upwards of 500 otters, the produce of this country alone, were exported during the last year. Near to these was a beautiful and interesting group of beavers (*Castor Americanus*). The beaver, in former years, was one of the Hudson's Bay Company's most valuable productions; but since its use has been almost entirely discontinued in the manufacture of hats, it has lost much of its value. Experiments have, however, been made, and are progressing satisfactorily, to adapt its fine and silky wool to weaving purposes. For ladies' wear, a most beautiful fur has been the result of preparing the beaver by a new process, after which the surface is cut by an ingenious and costly machine. It is exported in its prepared state for the use of the higher classes in Europe and the East. The rich white wool from the under part of the beaver brings at the present time a very high price, and is, we believe, largely exported to France, where it is manufactured into a beautiful description of bonnets. Passing from the beavers, we came to two groups, one of the lynx (*felis Canadensis*), the other of the lynx cat (*felis rufa*), both of which, when dyed, were formerly much used. Their rich, silky, and glossy appearance justly caused them to be great favourites; but the caprice of fashion at length banished them from this country. They are, however, still dyed, prepared, and exported in large numbers for the American market, where they are much admired. In its natural state the fur is a greyish-white, with dark spots, and it is much used by the Chinese, Greeks, Persians, and others, for cloaks, linings, &c., for which purposes it is very appropriate, being exceedingly warm, soft, and light. The lynx of the present day is the fur formerly called the "lucern."

We had next groups of the wolf (*canis occidentalis*); of the fisher (*mustela Canadensis*); of the wolverin (*gulo luscus*). The wolves' skins are generally used as cloak and coat linings in Russia and other cold countries, by those who cannot afford the more choice kinds; also for sleigh coverings and open travelling carriages. The other skins enumerated are principally used for trimmings, &c. The tail of the *canis occidentalis* is very valuable, and is exclusively used by the Hebrew race on the Continent. The North

American badger, of which some fine specimens were shown, is exported for general wear; its soft fine fur rendering it suitable for that purpose. The European badger, on the contrary, from the wiry nature of its hair, is extensively used for the manufacture of the superior kinds of shaving-brushes. The Hudson's Bay martin or sable (*mustela martes*), is principally used for ladies' wear, and is next in repute and value to the Russian sable. It is consumed in large quantities in this country, in France, and in Germany. The darkest colours are the most valuable, and the lighter shades are frequently dyed to imitate the darker varieties. The heraldic associations connected with the sable render it highly interesting to the historian and the antiquary. In every age it has been highly prized. The lining of a mantle, made of black sables with white spots, and presented by the Bishop of Lincoln to Henry I., was valued at £100, a great sum in those days. In the reign of Henry VIII. a sumptuary law confined the use of the fur of sables to the nobility above the rank of viscounts. The minx (*mustela vison*), is exclusively the produce of the Hudson's Bay Company's possessions, and other parts of North America. It is consumed in Europe in immense quantities, principally for ladies' wear; its rich, glossy appearance, and dark brown colour (similar to sable), combined with its durability and moderate cost, justly render it a great favourite.

The musquash, or large American musk rat, is imported into this country in immense numbers; it was formerly used much in the manufacture of hats, but the introduction of the silk hat has entirely superseded it. The musquash is now dressed in a superior way, and is manufactured extensively for female wear, both in its natural and dyed state. It is a cheap, durable, and good-looking fur. This humble article has, we believe, been introduced to the public under every name but its real one, and thousands who use it are led to believe that they are possessed of sable, minx, and other real furs. The white hare (*lepus glacialis*), from the Polish regions, and also from Russia, is perfectly white in winter, but in summer it changes to a greyish tint. The skins being exceedingly tender, it has latterly given place to the white Polish rabbit, which is more durable, and therefore more suitable for that purpose. When dyed, it looks exceedingly rich and beautiful, and is often palmed off upon the inexperienced for superior furs. The Hudson's Bay rabbit is one of the least valuable skins imported by the company. Like all furs from the polar regions, it is fine, long, and thick, but the skin is so fragile and tender, that it is almost useless; it is, however, dyed and manufactured for ladies' wear, and is sold by many dealers, we believe, under various names, and even frequently as sable; but, to the great annoyance of the purchasers, it soon breaks, the fur rubs off, and it falls to pieces. The large North American black bear is termed the "army bear," because its fur is generally used in this and other countries for military purposes, for caps, pistol holsters, rugs, carriage hammercloths, sleigh coverings, and accompaniments. The fine black cub bears are much sought after in Russia for making shube linings, coat linings, trimmings and facings; the other sorts, with the large grey bears, for sleigh coverings, &c. The skin of the white Polar bear, the supply of which is very limited, is generally made into rugs, which are often bordered with that of the black and grey bear. The brown Isabella bear is at the present time used for ladies' wear in America. Forty years since, the Isabella bear was the most fashionable fur in England—a single skin producing from thirty to forty guineas; but the caprice of fashion causes similar skins at the present time to produce not more than as many shillings Near the group of bears was a small and valuable collection of the skins of the sea otter (*eutrydra maritima*). This animal is mostly sought after by traders on account of its value—a single skin producing from thirty to forty guineas. It is said to be the royal fur of China, and is much used by the great officers of state, mandarins, &c. It is in great esteem in Russia, and is principally worn by the nobles, for collars, cuffs, facings, trimmings, &c. On account

of its great weight, it is rarely used by ladies. Among North American and Canadian skins, Messrs. Nicholay and Son exhibited likewise a group of racoon (*procyon lator*). The finest qualities of racoon are, we believe, produced in North America, and are imported into this country in immense numbers. They are purchased here by merchants who attend the periodical fur sales, and who dispose of large quantities at the great fair at Leipsic. They are principally used in Russia and throughout Germany, for lining shubes and coats, and are exclusively confined to gentlemen's wear. The dark skins are the choicest, and are very valuable. We had next a group of cat lynx (*felis rufa*). This animal is mostly found in Canada, and is a distinct variety of the lynx species; the skins are exported, and are made into cloak and coat linings, being very suitable for cold climates, and very moderate in price. The North American minx is found in great numbers in Newfoundland, Labrador, the Canadas, &c., and is the finest of the species. Several most excellent specimens of this skin were shown. Some furs of the Virginian or North American grey fox completed the collection of the produce of the Canadas, Newfoundland, and Labrador. This fur is at present used to a considerable extent for open carriage wrappers, sleigh wrappers, coat and cloak linings, also for fur travelling bags, foot muffs, &c. Its exceedingly moderate price, warmth, and great durability, render it an especial favourite.

We now propose to notice the European furs. Foremost in interest among those was a group of Russian sables (*martes zibellina*). This is one of the most costly furs, a single skin varying in price from three to ten guineas. It is usually manufactured into linings, which are generally used as presents by the Emperor of Russia, the Sultan, and other great potentates, being of the value of one thousand guineas and upwards. They are also manufactured for ladies' and gentlemen's wear, according to the prevailing fashion of the country. The Lord Mayor, Aldermen, and Sheriffs of the city of London, have their robes and gowns furred with the sable, according to their respective ranks. The tail of the sable is also used in the manufacture of artists' pencils or brushes, being superior to all others. The tail of the sable makes very beautiful trimmings, which, together with muffs and boas of the same, are much prized. Russia produces about 25,000 of these valuable and admired skins annually. Naturalists have not yet decided whether this species is identical with that from North America—the fur of the former being much softer, finer, and longer than that of the latter.

The stone martin (*martes albogularis*), of which several groups were exhibited, is widely spread over Europe, and derives its name from the fact of the animal selecting rocks, ruined castles, &c., as its haunts. The fur in its natural state is soft and fine, and shades from a light to a dark-bluish grey, taking the colour of the rocks amongst which it is found. The throat is invariably a pure white. The French excel in dyeing this fur, and it is in consequence termed French sable; it is extensively used in this country, and being a permanent colour, and much like the true sable, it is a great favourite. Several groups of baum (or tree) martin (*martes abietum*), were also shown. This fur derives its name from the fact of the animal being invariably found in woods and pine forests. The fur in its natural state is similar to the North American sable, but coarser. It is distinguished by the bright yellow colour of the throat: when dyed, it is so like the real sable, that it can scarcely be distinguished from it.

The groups of ermine (*mustela erminæ*), in their natural state, next demand notice. The ermine is obtained in most countries; but the best is from Russia, Sweden, and Norway. The animal is killed in the winter, when the fur is pure white (except the tail, with its jet-black tip), it being in that season in its greatest perfection; in summer and spring it is grey, and of little or no value. It is the weasel of more southern climes. The ermine is the royal fur of most countries. In England, at the coronation of the

sovereign, the minever, as the ermine is styled in heraldic language, is used, being powdered, that is, studded with black spots; the spots, or powdered bars, on the minever capes of the peers and peeresses, being in rows, and the number of rows or bars denoting their various degrees of rank. The sovereign and the members of the royal family have the minever of the coronation robes powdered all over, a black spot being inserted in about every square inch of the fur. The crown is also adorned with a band of minever, with a single row of spots; the coronets of the peers and peeresses having a similar decoration. The black spots are made of the skin of the black Astracan lamb. On state occasions, in the House of Lords, the peers are arrayed in their robes of state, of scarlet cloth and gold lace, with bars or rows of pure minever, more or less according to their degree of rank; the sovereign alone wearing the royal minever, powdered all over. The judges, in their robes of office, are clad in scarlet and pure ermine. The ermine, with the tail of the animal inserted therein, is used as articles of dress for ladies, in every variety of form and shape, according to the dictates of fashion, and also as cloak linings. The minever can only be worn on state occasions by those who, by their rank, are entitled to its use. In the reign of Edward the Third, furs of ermine were strictly forbidden to be worn by any but the royal family; and its general use is prohibited in Austria at the present time. In mercantile transactions the ermine is always sold by the *timber*, which consists of forty skins. The minever fur of the olden time was taken from the white belly of the grey squirrel. The Kolinski (*mustela Siberica*), or Tartar sable, is procured from Russia; it belongs to the weasel tribe, and is in colour a bright yellow: it is much used in its natural state, and is also dyed to imitate the cheaper sables. The fur which is probably more extensively used in this country than any other, is that of the squirrel (*sciurus*). The squirrel abounds in Russia (where the fur attains the greatest perfection), in such immense numbers as would appear almost incredible—the importation from thence to this country alone, last year, exceeding two millions. It is manufactured entirely for ladies' and children's wear: for cloak and mantle linings it is particularly suitable, its moderate cost adapting it to general use. The celebrated Weisenfels linings deserve a remark here, being made from the belly or white part of the dark blue squirrel. The exquisite workmanship and lightness of this article are without parallel, a full-sized cloak-lining weighing only twenty-five ounces. This favourite commodity is known as the *petit gris*. For colder climates the linings are made from the back or plain grey part of the squirrel, the best having part of the tail left on each skin. The lighter colours have lately been dyed, and introduced to imitate the expensive sables. The squirrel tail is made into the round boa and trimmings, purposely for the foreign market; it is also used for artists' pencils. We find the squirrel named in the sumptuary laws, in the reign of Henry III., and at the same period the minever fur was the white part of the squirrel's belly. Russia produces about 23,000,000 annually.

The fitch or pole-cat (*putorius fœtidus*) is also so well known as to need but little description. About forty years since it was one of the most fashionable furs; the richness of its colour (the top hair a jet black, the ground a rich yellow), combined with its durability, caused a great consumption of this skin; but its peculiar odour, from which it is called the *foulmarte*, has probably been the cause of its gradual disuse. It is produced in the greatest perfection in this country. Of lambskins there were various specimens, including those from Crimea, the Ukraine, Astracan, with Persian, Spanish, Hungarian, and English. The grey and black Russian lamb is mostly used for gentlemen's cloak and coat linings, for facings, collars, caps, &c., and also for army purposes. The Astracan lamb has a rich wavy, glossy, black skin, extremely short in the fur, having the appearance of beautiful watered silk: in order to obtain this choice skin, the parent

sheep is destroyed a certain time before the birth of the lamb. The Persian grey and black lamb is covered with the minutest curls possible; this is not a natural growth, but is caused by the animal being, as soon as born, sewed up tightly in a leathern skin, which prevents the curl from expanding, and which is not removed till the desired curl is produced; from the means adopted, both sorts are rather costly, and they are used for gentlemen's wear and military purposes. The Hungarian lamb is produced in that country in immense numbers; the national coat, called the Juhasz Bunda, is made of it. In the summer or in wet weather the fur or woolly part is worn outside; in winter when warmth is required, it is reversed. The skin is tanned or dressed in a way peculiar to the country, and decorated and embroidered in accordance with the means and taste of the wearer. In Spain, the lamb is used for the well-known and characteristic short jacket of that country, which is adorned with filagree silver buttons; the coarse kinds of both colours are used for our cavalry, and they are also employed for mounting and bordering skins, as leopards, tigers, &c., for ornamental and domestic purposes. In the reign of Richard II., the sergeant-at-law wore a robe furred inside with white lambskin and a cape of the same. The furs of the perewaitzki and of the hampster, which are obtained from Russia, are principally used by ladies; the latter is made into cloak linings, which are exceedingly light, durable, and cheap.

Passing from these, we next come to the skin of that well-known and useful domestic animal, the cat. The cat, when properly attended to, and bred purposely for its skin, gives a most useful and durable fur. In Holland it is bred and kept in a confined state till the fur attains its greatest perfection, and it is fed entirely on fish. In other countries, and especially our own, it is produced in large numbers. The wild cat is much larger, and longer in the fur, and it is met with in extensive forests, particularly in Hungary; the colour is grey, spotted with black, and its softness and durability render it suitable for cloak and coat linings, for which purpose it is much used. The black species is also much in request, and is similarly used, and, with the spotted and striped varieties, it is made into wrappers for open carriages, sleigh coverings, and railway travelling. The value of this skin, and its extensive consumption, have, no doubt, been the cause of the disappearance of many a sleek and favourite "tabby," and we would recommend those of our readers who are in possession of a pet of this description to keep careful watch and ward over it. We understand that the market is rapidly increasing, and the operation of the laws of supply and demand has led to the formation of an unprincipled class, who ruthlessly poach upon these domestic preserves.

We next come to the English rabbit, which yields a most valuable and extensively used fur—both in its wild and its domestic state; and the supply may be said to be inexhaustible. It was formerly employed to make the felt bodies, or foundation, of the beaver hat; but at present, not being used for that purpose, it is dressed, dyed, and manufactured in immense quantities into various useful cheap articles. The wool has recently been used in making a peculiar cloth, adapted for ladies' wear. The English silver grey rabbit was originally a breed peculiar to Lincolnshire, where great attention was paid to it. Warrens of this species have since been formed in various parts of the country. It is in great demand in China and Russia, to which countries it is largely exported, on account of the high price there obtained. The white Polish rabbit is a breed peculiar to that country, and the skin is there made into linings for ladies' cloaks, being the cheapest and most useful article available for that purpose. It is imported in great numbers into this country. The finer sorts of white rabbit are much used as substitutes for ermine; and when the real ermine tails are inserted therein, the imitation is so perfect that it requires the practised eye of the furrier to detect the imposition. So late as the reign of Henry VIII. great value was attached to the cony or rabbit skin, and the charter

of the Skinner's Company shows that they were worn by nobles and gentlemen. Acts of parliament were passed, regulating their sale and exportation, which are still unrepealed, though in abeyance. Several fine specimens of seal skin were contributed by Messrs. Nicholay and Son. The fur seal, the supply of which is small compared with other kinds, is brought to a degree of high perfection in this country; when divested of the long coarse hair, which protects it in its native element, there remains the rich, curly, silky, yellowish down, in which state it was formerly used for travelling caps and other purposes. It is now seldom made use of in this state, but is dyed a beautiful Vandyck brown, giving it the appearance of the richest velvet; and it is manufactured in every variety of shape and form, into articles of dress for ladies', gentlemen's, and children's wear. Passing from the seal skins, we next observed several groups of chinchilla. The chinchilla is exclusively a South American animal. Since its introduction into this country and France, about forty years since, it has continued to be a favourite and fashionable fur. Its extreme softness and delicacy confine it to ladies' wear. It has lately been largely exported from this country to Russia and Germany, where it is greatly admired. The bastard or Lima chinchilla is a short poor fur, altogether very inferior to the other, but often, to those who are not judges, substituted for the superior kinds.

Leaving the northern latitudes and the New World, let us direct our attention to the skins from the tropics, such as lions, tigers, leopards, panthers, &c., several fine specimens of which were shown in the Indian department, as well as by individual exhibitors. In China, the mandarins cover the seats of justice with the skin of the tiger. In this country, the use of the leopard's skin under the officers' saddles is a mark of military rank adopted in some of her Majesty's cavalry regiments. In Austria the small fine leopard's skin is worn as a mantle by the Hungarian noblemen of the Imperial hussar body guard. Of buffalo robes, or skins, several specimens were exhibited. The buffalo is killed in immense numbers by the North American Indians, solely for the tongue, the skin, and the bosses. They have a peculiar method of dressing the skin with the brains of the animal, in which state it is always imported. It has of late years been much used in Europe and this country as a warm travelling wrapper, its moderate price placing it within the reach of almost all classes; and in the colder climates it is similarly used also for sleigh wrappers, and cloak and coat linings. From Asia Minor we had specimens of the skin of the Angora goat, which is produced in large numbers in that part of the world, and is remarkable for its long, curly, rich, white, silky coat. It was formerly a most costly and fashionable article of ladies' wear, but it is at the present time of little value. When dyed, it takes some of the most beautiful and brilliant colours. Its low price has caused it to be adapted to weaving purposes with success. It is frequently made into very beautiful rugs for drawing-rooms, carriages, and other purposes.

FEATHERS.

The class in which furs and skins were exhibited also included feathers, the principal British display of which was by Messrs. Adcock and Co. Among their collection of feathers for dress, in a handsome glass-case in the British nave, were the several varieties of the feathers of the ostrich, dressed and undressed, which vary in quality according to soil and climate. There were some of the finer sorts, such as the Aleppo and Mogador, made into plumes, as used by the Knights of the Garter, the Knights Grand Crosses, and the King's Champion at the coronation of George IV. These feathers were also shown formed into a variety of court plumes, such as have been worn since the beginning of the century up to the present time, showing the alterations in the fashion during the last fifty years. Some of the black feathers—which come from the back and wings of the bird—are made into plumes for military purposes, as used by the Highland

regiments; some are dyed in brilliant colours, and, to show the perfection of the art, several colours are produced upon the same feather, a process never attempted until within the last twenty years. There were also specimens from the marabout stork (*leptoptilus crumeniferus*) made into plumes and screens, with the feathers of the scarlet ibis, which have a very pretty effect; some of these were also dyed various colours on the same feather. There were likewise some knotted and made into trimmings, with gold, suitable for dresses—a work of great time and patience, as every knot has to be tied separately. Some of the grey marabouts were dyed black, which, in this description of feather, is a colour very difficult to produce. The feathers of the birds of Paradise were in great variety, both in their natural state and dressed for ladies' use; some were dyed different colours, many of which, considering the natural colour of the bird (which is a bright gold), are very difficult to accomplish—as, for instance, the purple and rose colours, as well as the mixed hues, which are not very often seen. Some plumes made from the feather of the rhea, or South American ostrich, were also to be found among the collection. These feathers are usually called by the plumassiers "vultures," and are used for a variety of purposes—some for military plumes, others for ladies' wear. There were also the feathers of the emu, which are much prized on the continent, and are there known as the *plume de casoir*. The feathers of the heron (*ardeà cinerea*), which are used by the Knights of the Garter, are very valuable, owing to their scarcity—a small plume being worth fifty guineas. The plumes of the plotus aulinga (*plumes d'auligna*), a rare feather, also were in great variety, some mounted with gold and silver. These feathers are frequently called heron plumes, and are worn by persons of rank in the East. Besides these, there were the feathers of the large egret, which are used by the officers of the hussar regiments. There were also the feathers of the small egret (*herodias gurzetta*), some dyed in different colours; the feathers of the scarlet ibis, in the form of wreaths; also those of the argus pheasant, made into screens, and the feathers of the peacock. We had likewise some from the common cock, made into a variety of plumes, as well as those of the turkey, the swan, and the eagle; the latter are used in the Highland costume.

Some interesting specimens of the grebe (*podiceps cristata*) were to be seen in the fur department. This is an aquatic bird, inhabiting most of the lakes in Europe. The choicest specimens were from Geneva, Italy, and Holland. The feathers are of the richest white, having the appearance of polished silver, the plumage on the outer edge of the skin being a rich dark brown; it is used by ladies, forms a most beautiful and elegant article of dress, and is worn as trimmings for the trains of court and drawing-room dresses, for muffs, cuffs, boas, &c. It is very durable; the exquisite smoothness of the feathers prevents its soiling with wear. We next notice the beautifully soft and elastic down known as the eider-down. The bird from which this substance is taken is found in large numbers in Iceland, Norway, and Sweden. Its colour is dark grey, and its elasticity, lightness, and resistance to wet, are prominent amongst its other advantages; it is used for the inside stuffing of muffs. On the Continent the well-known eider-down quilts are, on account of their lightness and warmth, considered almost indispensable to bedrooms. The eider-down is applied to wearing apparel; by being placed immediately under the lining, and quilted, it forms one of the lightest and warmest articles of dress, both for ladies and gentlemen. The beautiful material known as "swan's-down," of which there were several specimens, is obtained from the swan after the feathers have been plucked. The feathers, prepared and purified, are used for beds, and, being exceedingly durable and elastic, are particularly suited for that purpose. The Hudson's Bay swan quills are much in demand for pens, and for artists' brushes or pencils, and command a high price. A portion of the plumage is also used for ornamental and fancy

purposes, and military plumes. Goose-down is manufactured to a considerable extent in Ireland, by being sewed on textile fabrics. The article has been patronised and sold in England extensively, for the benefit of the poor Irishwomen, by whom it is made up. The price, compared with the true swan's-down, is very moderate. Being sewed upon cloth, it can be washed; on the contrary, swan's-down must be placed in the hands of the furrier when required to be cleaned.

A specimen of the ornithorhyncus, or duck-billed platypus, a native of Australia—one of the most extraordinary animals in nature—was exhibited by Mr. Ellis, of Fore-street. The skin is very much like that of the otter, and seldom exceeds twelve inches in length; the supply is very limited. The animal is a sort of connecting link between the bird and the beast—having the claw and body of the latter, and the bill and web foot of the duck. The male is furnished with two powerful spurs on each hind leg, similar to the game cock. The female lays eggs, which she hatches, and then suckles her young brood—which extraordinary fact was not generally credited till, some years since, preserved specimens of the creature were brought to this country, and submitted to the late Sir H. Halford, who dissected them, and delivered a lecture thereon at the College of Physicians, when this circumstance was first made public. Many attempts have been made to bring them to this country alive, but without success. In the Cape of Good Hope department a tippet was shown made from the feathers of various Cape birds. From Van Diemen's Land some feathers from the mutton bird, or sooty petrel (*puffinus brevicaudus*) were shown. They are well adapted, and are much used in the colony, for pillows, bolsters, and mattresses. From the immense numbers of these birds which resort to the islands in Bass's Straits, and the profusion of feathers with which they are clothed, there would be no difficulty in obtaining the latter in any quantity that might be required. When better known in this country, it is not unlikely that they will prove a profitable article of export from the colony. In the foreign department the display of feathers was very limited. Those more particularly worthy of notice were two splendid heron plumes, contributed by MM. Perrot, Petit, and Co., of Paris, of the value of 3,000f. each, and some very fine bird of Paradise feathers. There were also some fine specimens, adapted for ornaments for the mantel-piece, for head-dresses, and screens, exhibited by M. L'Huillier and M. Lodde, of Paris.

CHAPTER V.

SCULPTURE—*continued.*

HONOURABLE MENTION: BEHNES, BISSEN, BONASSIEUX, CLESSINGER, CORDIER, COSTOLI, FRESCIA, NENCINI, GEEFS, JAQUET, LEER, MARCHESI, MILLER, PASCHAL, SANGIORGIO, STEPHENS, THEED, THORNYCROFT, WAGNER, WEEKS—COLOSSAL STATUE OF THE QUEEN—STATUE OF THE DUKE OF WELLINGTON—MARQUESS OF WELLESLEY—VICTORY, BY RANCE—WOODINGTON'S GIRL AT THE SPRING—GROUP OF MILTON AND HIS DAUGHTERS, BY LEGREW—GROUP OF SCIENCE UNVEILING IGNORANCE AND PREJUDICE, BY THOMAS—SAMSON BURSTING HIS BONDS, BY LEGREW, ETC., ETC.

Having in our last chapter on sculpture, described the productions of those artists who received, from the award of the jury, council and prize medals, we now propose to devote our attention to the examination of the works of such as received the gratifying distinction of "Honorary Mention."

Mr. William Behnes, of London, is the first upon our list among these worthies, being indebted for the honour he received to his statue, in marble, of "A Startled Nymph," represented as just emerging from the bath, and startled by the sudden appearance of a lizard at her feet. The sentiment expressed by the sculptor in this simple and graceful figure was one of mingled curiosity and surprise, rather than of fear or alarm. The treatment of the subject was free from any false affectation, and the beauty displayed, "when unadorned, adorned the most," was full of innocence and nature.

M. H. W. Bissen, of Copenhagen, exhibited a spirited figure of Orestes, the impassioned and poetical hero of the Greek dramatist, brandishing his sword, and rapidly moving forward. In this work the conception was full of life, the momentary character of the action well rendered, the countenance full of nobleness and grace, and the execution carefully attended to.

Bonnassieux, of Paris, and Clesinger, of Besançon, received their respective meed of praise; the first for a group in bronze, representing Cupid, as a youthful figure, clipping the tips of his own wings, a dog standing beside him. The form of the Cupid was very graceful, but it appeared to us that the head was too directly copied from the antique. The execution, moreover, was very unequal; the dog, in particular, being very carelessly modelled. The second, but for the meretricious character of his production, would have received a still higher distinction. It represented a Bacchante rolling upon the ground under the full excitement of "tipsy revelry." The figure was remarkable for the masterly chiselling of the marble, the great knowledge of anatomy, and the beauty of the countenance. But these excellences were not sufficient to excuse the sculptor for having in his work allowed his imagination to be perverted and degraded to the service of a low sensuality. We trust this young artist, whose talents are unquestionably of the highest order, will, in his future works, elevate his genius to the contemplation of purer and less exceptionable forms. Of a very different description was the unpretending but meritorious work of C. Cordier, of Paris, representing the head of a Negro, in bronze, a true example of characteristic portraiture, full of life in the conception, and masterly in execution. After the statue of the Dying Gladiator, that dignifies by its august presence the marble halls of the Roman Capitol, it appears presumptuous in a modern sculptor to attempt a fresh representation of the subject. The bow of Ulysses none of the suitor tribe were able to bend. Nevertheless, the Dying Gladiator, by Signor Costoli, of Florence, has been honourably mentioned by a discriminating and impartial jury, and is worthy of our favourable notice. Signors Fresoia and Nencini, both also of Florence, have the same claim upon our praise; the one for his statue of Psyche, the other for a figure of a reclining Bacchus. They, likewise, both received "honourable mention."

The same honour was also awarded to M. Joseph Geefs, of Antwerp, for his "Faithful Messenger," in which work the sculptor has represented a dove perching on the shoulder of a young girl, to whom it has returned. The statue was very pleasing, but it was hardly a work of sufficient consequence to give an idea of the distinguished merits of this artist. M. J. Jaquet, of Schaerbeek, near Brussels, figures in the same list, for his group, in plaster, of Cupid asking Venus to restore his bow, which she has taken from him. This work was pleasing, though somewhat affected in motive. The execution was careful, though the development of the muscles, particularly on the back and shoulders, was too strong.

M. J. Leeb, of Munich, received honourable mention for his statue of a Young Girl holding a nest full of young Cupids; an extremely agreeable composition, full of *naïveté* in conception, and carefully executed in marble. The late admirable Thorwaldsen was particularly successful in these little anacreontics in marble, as his well-filled studio in

the piazza Barberini at Rome bore ample testimony. Marchesi, of Milan, next demands our notice for his statue, in marble, of Eurydice, which, although its execution was somewhat neglected, fully deserved the award it received for its design and agreeable expression. Mr. F. M. Miller, of London, was also comprised in the list, honourably mentioned, for his marble group of Two Orphan Children at Prayer; as were Mr. and Mrs. Thornycroft, for their agreeable statues, in plaster, of the Royal Children in the character of the Seasons.

M. Michel Pascal, of Paris, also received the same desirable mark of distinction for a group, in marble, of a Monk holding out a crucifix, which a little boy was eagerly kissing; a little girl was standing by, steadfastly gazing at him. There was a charming feeling for nature in the expression of the heads, but the general composition, and particularly the drapery, might be considered rather picturesque than plastic in style, and, with the exception of the nude forms, the whole was only sketched out in the marble. Signor A. Sangiorgio, of Milan, comes next upon our list for his colossal bust, in marble, of the poet Vincenzio Monti. The conception of this work was very spirited, but a little strained, and the execution most masterly and careful. E. B. Stephens, of London, for his Deer Stalker and Dog; and W. Theed, also of London, for his Prodigal Son and his Narcissus, works already noticed by us, appear in this category, which we conclude with the name of H. Weekes, for his Sleeping Child, with a Dog. In casting an eye over our review of the productions in sculpture in the Crystal Palace, it will be seen that no other nation exhibited so many works of this class as Great Britain. It was observed by the jury, that this might be partly accounted for by the fact, that the English sculptors have not been embarrassed, like those of other countries, by the cost of transporting their works from a distance; but the far greater wealth of the English, as compared with other nations, is another cause of this numerical superiority. With regard to the quality of their sculpture, it must be confessed that the productions of the modern English school, till within a comparatively recent date, have not been such as to command the approbation of the most competent judges. "In the earlier periods of English art," observes an able critic, "the name of Flaxman stands alone; and, fertile as this great genius was in invention, the execution of his works hardly equals the beauty of their conception. His influence seems to have been scarcely felt for a considerable period; the strong tendency to Realism* in the English school of sculpture found its natural expression in portraiture. Chantrey, long pre-eminent among his contemporaries, produced a great number of admirable busts; but in all the works of this period which have a higher pretension, and claim to rank as Ideal sculpture, there is a striking deficiency, not only in scientific knowledge, but in taste and in genuine Plastic style.

Having now in this and in several preceding chapters expatiated on the magnates among the sculptors, such as were deemed, in the opinion of an enlightened jury, worthy of distinction, from the envied holder of a council medal, to the gratified receiver of "honourable mention," we will now bestow a glance or two towards those less favoured sons of the chisel whom we do not consider the "*oi polloi*" of their race, merely because their contributions were altogether unnoticed in "the Reports." Some of their works, in companionship with those of their more favoured brethren, have, in the opinion of *our* talented jury, been deemed worthy of illustration by the burin of the most distinguished

* A work is called Realistic when the artist restricts himself to the task of rendering an individual model in all its parts, forms, character, and the like, just as they appear before him. On the other hand a work of art is called Ideal when the artist modifies the figure in these same respects according to his own feeling for its inner significance and outward beauty of form—attributes which necessarily vary in each case.

artists, and have been the subject of admiration to our innumerable readers. Gray has beautifully observed of these obscurer treasures—

> "Full many a gem of purest ray serene
> The dark unfathomed caves of ocean bear,
> Full many a flower is born to blush unseen,
> And waste its sweetness on the desert air."

Waiving, however, the question as to the exact applicability of this quotation to the subjects before us, let us resume our critical exposition; we shall in the first place, make mention of "a colossal statue of the Queen," which represented our gracious Sovereign seated upon the throne, arrayed in all the attributes of royalty, an appropriate compliment from the Vieille Montagne Zinc Company, of France and Belgium, to this country, in commemoration of the Great Exhibition of all Nations. Its production also afforded an instance of extraordinary energy, having been, we are informed, "commenced and brought to its perfect state within the short space of three months." The statue stood, with the pedestal, twenty-one feet high. The design and modelling were from the hands of M. Dantan, *aîné*, of Paris; the etchings of the pedestal by M. Lenormand, architect, and produced by M. Hardouin. The statue was cast under the immediate inspection of M. Victor Paillard. Independently of all consideration as a work of portraiture, this was a remarkable production, and deserved attention. We, nevertheless, protest against colossal portraits, particularly of females. Beauty and grace are altogether independent of size; neither does the expression of dignity and power require any development beyond the natural dimensions of the human figure. We do not fancy a Venus twelve feet in height; such Brobdignagian beauties are by no means to our taste; neither do we think the majesty of a hero is at all increased by extending his corporeal bulk. Alexander, Napoleon, and Wellington, were anything but gigantic in stature. Why then should we have the "hero of a hundred fights" presented to us in colossal proportions, as Mr. Milnes has represented him? In honour of his great name and glorious achievements, we have—notwithstanding our opinion of its merit as a work of art is by no means an exalted one—assigned a place among our illustrations to the statue of the departed warrior, as well as to that of the illustrious statesman, his kinsman and namesake.

The idea of victory so naturally follows the name of Wellington, that we need no apology for introducing to the notice of our readers, the statue of that goddess, by Professor Rance, of Berlin, a delineation of which will be found among our engravings, from the daguerreotype. She is represented sitting, apparently overlooking a field of battle, and holding a wreath of laurel in her hands, ready to crown the successful combatant. From the tented field, let us pass to "the gentle neighbourhood of grove and spring," and bestow a glance of admiring approbation on yonder graceful figure of a nymph. It is from the chisel of Woodington, and was entitled "A young Girl at the Spring," and a very classical and beautiful figure it is, and well worthy of examination and praise. We shall next direct attention to a group by Legrew, entitled "Milton and his Daughters." The immortal bard is represented sitting between his two female supporters, raising his eyes heavenward, and apparently in the fervour of composition. We may even imagine him, from the sad, yet elevated expression of his countenance, to be giving utterance to his beautiful and touching apostrophe:—

> "———————— Thus with the year
> Seasons return; but not to me returns
> Day, or the sweet approach of even or morn,
> Or sight of vernal bloom, or summer's rose,
> Or flocks, or herds, or human face divine;
> But cloud instead, and ever-'during dark

Surrounds me, from the cheerful ways of men
Cut off, and for the book of knowledge fair,
Presented with a universal blank
Of nature's works to me expunged and raised,
And wisdom at one entrance quite shut out.
So much the rather thou, celestial light,
Shine inward, and the mind through all her powers
Irradiate; there plant eyes, all mist from thence
Purge and disperse, that I may see and tell
Of things invisible to mortal sight."

In the vicinity of the above described group, was an allegorical composition by Thomas, denominated "The Spirit of Science unveiling Ignorance and Prejudice." We do not particularly admire allegory, either in sculpture or in painting. Even in poetry it is wearisome. The sweet and impassioned language of a Spenser renders it barely endurable. The glowing tints and vigorous delineation of Rubens fail to give it interest, and sculpture wastes her powers on mystifications, that are generally unintelligible without the aid of lengthened description. In the present subject, we see no reason to change our opinion, as to its failure in respect to interest. "Sampson Bursting his Bonds," by Legrew, was not so felicitous an attempt as his Miltonic group. The artist has fallen into the usual error of nearly every one that has treated the subject, of representing his hero as a mere man of extraordinary weight and muscle. Scripture does not authorize the idea that the divinely gifted Nazarite was nothing more than a brawny giant, if he was a giant at all, or that his strength, like that of ordinary mortals, was consequent on physical superiority; the gift was mysteriously placed in his hair, and when his locks were shorn from his temples, his strength departed from him, although it cannot be pretended that his bodily frame, the compactness of bone and muscle, was one whit diminished or in any respect impaired. No—the divine gift, the heavenly inspiration, was altogether wanting. We were tempted, as we stood before this ponderous piece of muscular development, to exclaim with the chorus in Milton's noble poem—

"Can this be he,
That hero, that renowned
Irresistible Samson?—whom unarmed,
No strength of man, or fiercest wild beast, could withstand;
Who tore the lion, as the lion tears the kid;
Ran on embattled armies, clad in iron,
And, weaponless himself, made arms ridiculous?"—*Samson Agonistes.*

We now turn to a classical subject in *basso rilievo*, by Physick, "Pluto and Proserpine." Of all fables of antiquity, none is more redundant of magnificence and gorgeous imagery than that of the Rape of Proserpine, as treated by the courtly Claudian, of whose enduring reputation, indeed, it forms the basis. Mr. Physick's highly poetical conception of the subject, and the spirit with which he has executed it, authorises, or rather demands a somewhat more detailed account of it than we can in general find room for, in our criticisms on individual performances. After a brief, but highly poetical introduction, the poet proposes at once his theme—

"Of hell's dread ravisher, whose fiery ear
And ebon steeds affrighted from their spheres
The train of night; of Pluto's bridal bower,
Dark in its festive gloom with horrid shades,
My labouring mind impels my eager voice
In daring notes to sing. * * * O, say,
What torch of love inspired the gloomy king,
What sudden seizure doom'd stern Proserpine
To joyless chaos."

We are then let into a few "family secrets," and we find that Pluto thinks himself, and with sufficient reason, very ill used by his brother Jupiter, who seems resolved to keep him in a state of celibacy, as well as in one of comparative exile among scenes "hideous and wild." He broods over his wrongs, till he feels inclined to call upon the furies and all his shadowy subjects, to aid him in his desire to avenge them, and turn the realms above into an uproar. From this he is dissuaded by the fates, who, kneeling before him, and strewing at his feet "their locks white with severest age," recommend the peace measures happily coming into vogue in the present day, and an appeal to the *moral force* of truth and fair argument. Accordingly, he sends Mercury to represent his wrongs to the ruler of the skies, who, after deep and deliberate cogitation, determines that the fair daughter of Ceres shall be the bride of the monarch of the dead. He accordingly instructs Venus to entice the fair Proserpine to the fragrant fields of Enna, "parent of sweet flowers;" where, while she is disporting with her attendant maidens,—

"Suddenly a tumult wild and loud
Arises; turrets bow their trembling heads,
And towers and lofty spires are levelled low;
No cause appears; the Paphian queen alone
Acknowledges the sign, and trembling feels
A doubtful pleasure, mixed with secret fear.
And now the dark-browed ruler of the dead,
Through shades, and winding caverns of the earth
Urges his fiery steeds. * * * * *
* * * * * Fast fly the nymphs,
Fair Proserpine is hurried to the ear,
Imploring aid."—*Strutt's Claudian.*

Having now arrived at the point of action represented in Mr. Physick's *basso rilievo*, we will dismiss the fair Proserpine to the care of the enamoured ruler of the shades below, and turn to an *enlévement* on a larger scale, celebrated in the early history of Rome, an incident in which the Marquis Ginori has sculptured in Parian marble on a small scale; and he has succeeded in producing an interesting and well-arranged group. "The Hours leading forth the Horses of the Sun," executed in rilievo for Earl Fitzwilliam, by Gibson, is a very classic and masterly performance, full of animation and spirit. This has always been a favourite subject, both with the sculptor and the painter. Every lover of the fine arts is acquainted with the exquisite fresco, representing the same subject, by Guido, in the Rospigliosi Palace, at Rome, so full of graceful elegance and poetic fancy, and of which the engraving of Raphael Morghen has so widely circulated the fame, without, however, equalling the surpassing beauty of the original.

Mr. Spence, a pupil of Gibson's, exhibited a statue of considerable merit, entitled "Highland Mary;" a personification of the maiden whose beauty and attractive grace enthralled the susceptible heart of the poet Burns, and whose early death he deplores in the following beautiful lines:—

"Thou lingering star with lessening ray,
That lov'st to greet the early morn,
Again thou usher'st in the day
My Mary from my soul was torn.
O Mary, dear departed shade!
Where is thy place of blissful rest?
See'st thou thy lover lowly laid?
Hear'st thou the groans that rend his breast?

That sacred hour can I forget,
Can I forget the hallow'd grove,
Where by the winding Ayr we met,
To live one day of parting love!

Eternity will not efface
  Those records dear of transports past;
Thy image at our last embrace;
  Ah! little thought we, 'twas the last.

Ayr gurgling kiss'd his pebbled shore,
  O'erhung with wild woods thickening green;
The fragrant birch and hawthorn hoar,
  Twined amorous round the raptur'd scene;
The flowers sprang wanton to be prest,
  The birds sang love on every spray—
Till, too, too soon, the glowing west
  Proclaimed the speed of wingéd day.

Still o'er these scenes my memory wakes,
  And fondly broods with miser care;
Time but the impression stronger makes,
  As streams their channels deeper wear.
My Mary, dear departed shade!
  Where is thy place of blissful rest?
See'st thou thy lover lowly laid?
  Hear'st thou the groans that rend his breast?"

While we are discussing these *quasi*-domestic subjects, we must not omit to notice two which have been drawn from the writings of the admirable author of *Pickwick*.—The first of these, "Oliver Twist," represents the interesting subject of the memoir, in his forlorn and destitute state, before he is accosted by the "artful dodger;" this was in the American department, and was the production of Stephenson, who exhibited the Wounded American Chief. The latter, "Little Nell and her Grandfather," was from the chisel of William Brodie, of Edinburgh, and formed an exceedingly attractive group. The point of time chosen was, when the old man had just escaped the fangs of the gambling sharpers, whose persuasion and advice had nearly driven him to exchange poverty for crime; and when his faithful Little Nell, like a guardian angel, had prevailed upon him to fly from the scene of temptation; but when "the noble sun arose, with warmth in its cheerful beams, they laid them down to sleep upon a bank hard by some water. But Nell retained her grasp upon the old man's arm, long after he was slumbering soundly, and watched him with untiring eyes."

The little group called "Love Triumphant," is one of those prettinesses in marble, which take rank with the minor productions of Simonis, and about which there is always a little knot of sympathisers in all public exhibitions. It is pleasant to see an artist of high merit descending to these lighter and more playful compositions. Thorvaldsen had, in the abundant treasures of his studio, many similar graceful trivialities, which never failed in attraction to all genuine admirers of art. But here, for the present, we conclude our remarks; in a future chapter we may perhaps devote a few more pages to the further consideration of this branch of the fine arts, gleaning here and there such remaining examples as may be likely to awaken the interest, and gratify the taste of our critical readers.

CHAPTER VI.

MR. WORNUM'S LECTURE—VARIOUS STYLES OF ART—REMARKS ON ORNAMENTAL DESIGN—ON CHINA, GLASS, AND SILVER—ENGLISH WOOD-CARVING—ORIENTAL DESIGN—ENGLISH AND FOREIGN ART COMPARED—CAUTION TO THE STUDENT—TEACHINGS OF THE EXHIBITION.

In the year of the Great Exhibition, it was curious to observe how the thoughts and conversation of all people turned upon the prevailing topic of interest, "the world's great show." Not only was the fruitful theme discussed in every private party, canvassed at every domestic hearth, but public lecturers and scientific writers also indulged in frequent allusion to, and serious investigation of, the actual state and future results of the mighty phenomenon. The following is the substance of a very interesting lecture delivered by Mr. Wornum at the Central School of Design, which we lay before our readers, not only to illustrate our remark, but as a very instructive piece of "gossip," if we may be allowed the term.

"My object," says the talented lecturer, "is not to explain the Exhibition, even generally, but rather to make use of the Exhibition, or more correctly, some prominent works of art-manufacture contained in it, as one huge illustration of the general principles I have advocated throughout in my lectures. There is not one point that I have urged that is not there practically demonstrated to be of essential importance; and I think I shall be able now to clearly show you that the very first business of every designer is to make himself master of the elements of all established styles, not only for the sake of knowing these styles, but to enable him to effect any intelligible ornamental expression whatever. You must know all: to study one style only will, perhaps, prove more fatal to your success than to study none at all; for, in the latter case, you are open to improvement and new impressions, while in the former your mind is, as it were, a stereotype of a few fixed ideas with which you stamp your uniform mark on everything you touch, as the ignorant knights of old made their sign-manual with their sword-hilts, or their thumb-nails. We have seen '*nature*' very often sententiously held up as in antagonism to the so-called historic styles, or absolutely in antagonism to art; this is only the outrageous presumption of ignorance. I need not demonstrate to you, that true art can never be the antagonist of nature. The treasures of art are derived as legitimately from nature's stores for the recreation of our minds, as the grains and fruits of the earth are provided by the husbandman's skill for the nourishment of our bodies. If pure '*naturalism*' is true for the mind, I maintain it is true also for the body; yet if so, there is nothing left for us but all to go out to grass. However, what is nature? We hear of three kingdoms of nature—the vegetable, the mineral, and the animal: one cannot be more natural than the other; therefore, on the score of *nature* herself, we cannot give the preference to any one in particular.

"The naturalists generally have not gone to nature, but only to one small class of individuals in one of its kingdoms. Let us by all means go to nature, but with a strict impartiality, selecting our forms simply with a view to the most appropriate contrasts or combinations in accordance with the sentiment of the design we have in hand, at once repudiating, *in toto*, the notion that mere imitation can in any way compensate for an incomplete or imperfect arrangement of the parts, as prescribed already by the very sentiment or principles of the contemplated design. This brings us to another point—how far using the elements of past times may be deprecated as a slavish repetition of ancient or mediæval art, and ignoring the wants and sentiments of the present age?

Such a result may accrue if we cannot separate old elements from old sentiments; we must, however, go very much out of our way to verify any such disaster, and certainly only by, in the first instance, adopting an old sentiment, as in the so-called Mediæval Court in the Exhibition. But there are, as I shall show as we proceed, very many works in the Exhibition eminently suited to the wants and sentiments of the present age, though composed as ornamental designs, entirely of old elements. The fact of ornamental elements being established favourites of remote ages, does not make them old in a bygone sense, unless they have sprung from a sentiment that is bygone. Many ancient and middle-age forms, if reproduced now in their genuine original character, would be at best but whimsical revivals; but beauty can never really be antiquated or old-fashioned, whatever the conventionalities of the day may be. What is inherently beautiful is for all time; and the repeated attempts at the revival of classical forms, with a steadily increasing interest on the part of the public, in spite of fashions or conventionalisms the most opposite, is at least one sure test of the inherent beauty of these forms. It is a morbid state to hunt after variety purely for variety's sake; and it is perfectly legitimate to preserve all that is beautiful, however we may continue to prosecute the search of the beautiful in other provinces; and there are still unexplored regions of nature left for us. It must be evident that efforts at variety, unless founded on the sincerest study of what has been already done, not by our own immediate rivals in our own time, but by all people at all times, are at most but assumed novelties; but if such really, the chances are that it is their only recommendation, as was the case with the Rococo, the novelty of which represents the exclusion of all the beauty of the past. "What is recommended by use never grows old: it is only what is fostered by fashion that will be superseded as a new fashion arises. So it is with the duration of the styles: some are characterised by mere local peculiarities or special objects, others by abstract principles. Local peculiarities, and all specialities, when their causes cease, must die out, and cannot be revived except by a revival of the cause; and so, if their causes cannot be recalled, it will be impossible to revive several of the historic styles; but where the causes of styles still exist, the styles themselves are as much of this age as of the past. The Classical and Renaissance styles are founded on abstract principles, and therefore may and must be revived as soon as their motives are thoroughly understood; and such a restoration is not a copy of an old idea, but a genuine revival of a taste—a very different thing from merely copying designs. "Then to apply our test to the Exhibition itself: it is generally admitted that in spite of much that is bad and indifferent, it offers, on the whole, an unprecedented display of art-manufacture. Of course, in the general review I now propose to take of this wonderful collection of the world's industry, I must limit my remarks, if I am to be at all practical, to the most prominent specimens only, or even to the mere treatment of classes of manufacture; and at present my object goes scarcely beyond an attempt to show you that all the most remarkable works there displayed owe their effect to a skilful management of the results of the labours of generations that have gone before us; from the study and mastery of past efforts, and not from any sudden impulse of genius or any intuitive adaptation of nature. All that is good is the result of the *study of ornament*, more or less universal or singular, according to the method of that study. The Exhibition contains nothing new—not one new element, not one new combination; and yet it represents, vast as it is, only a small proportion of the great national expressions of ornament, of past ages of the world. And in many cases we have very much more the simple reproduction of an old idea, than the veritable revival of the genuine artistic feeling of the past."

The lecturer then proceeded to illustrate his remarks by reference to portions of

the Exhibition. In Messrs. Wedgwood's stall he found a genuine revival of artistic feeling; and in Mr. Battam's a reproduction of old ideas. He spoke of the Sèvres room as showing general magnificence ,and classical taste. The glass stall of J. G. Green, of London, was another illustration of a legitimate application of an old taste to modern purposes. With reference to bronzes, the display of these, considering the applicability of the material, he thought remarkably small in the Exhibition, and the general taste trifling. He specially pointed out those by Potts and Messenger, those in the Cinque-cento style by Villemsens, and for general good taste, those by Mattifat. The genuine reproductions of the Renaissance by Barbèdienne; and the damascened work by Falloise, of Liège, were much to be admired. The silver work displayed the three tastes—Classical, Renaissance, and Louis XV. A vase, or centre-piece, by Wagner, he considered the finest thing there. A tea-service, by Durand, was noticed. The lecturer treated at some length on the specimens in oxidized silver, and showed the advantage of the method for the display of art. The works of Froment, Meurice, Rudolphi, and Gueyton, were especially mentioned. The Rococo prevailed too generally in English work. The classical specimens, by George Angel, were very admirable. The fine Cinque-cento centre-piece, by Brown (Hunt and Roskell), suffered, he thought, by frosting and burnishing. In the carvings there were specimens of Renaissance, Cinque-cento, and Louis XV. Fourdinois and Barbèdienne stood pre-eminent. Rinquet-Leprince, Durand, Krieger, Leclerc, and Cordonnier were noticeable. Lechesne's frame, in the Cinque-cento style, he considered a very fine work. After some remarks on the Austrian furniture, on the whole complimentary, the lecturer proceeded as follows: —The objections to English carving imply every want but those of mere mechanical skill and means. There is a want of definite design, and a disregard of utility: there is an overloading of detail, and an inequality of execution, often fatal to the whole effect. In some instances, where the human figure is mixed up with conventional ornament, the last is perfectly well executed, while the former is absolutely barbarous in conception and in execution. Other specimens found their pretensions solely on profusion of details: others, again, are conspicuous only for their bad style, or their Baroque mixture of styles. Let us, then, briefly sum up the conclusions that we may draw from this cursory survey that we have just made; and let every designer treasure it in his mind, for in this result he will have presented to him more forcibly than in any other way, the paramount importance of a knowledge of ornament over and above an artistic or manual dexterity. The Exhibition has pretty well proved that the most dexterous of all artists are the French, yet what an inveterate sameness their works must present to the French eye, from their so generally adopting the same style in almost ever branch of manufacture. A French design not in the ordinary Renaissance, is almost a curiosity: we certainly do find French examples of Greek, Gothic, and the now generally discarded Louis XV., but they are the rare exceptions. No skill of execution can ever atone for such excessive mannerism as this. The wide-spread influence of France, in spite of the most debased taste in design, the Rococo, is one curious picture presented to the mind by this assemblage of the world's industry.

Another great fact displayed, perhaps unavoidable where true education is absent, is the very general mistake that quantity of ornament implies quality. In the Oriental works, where quantity of detail is also the chief characteristic, it is of a kind so generally unassuming in its details, and harmonious in its effect and treatment, that the impression of quantity itself is the last that is conveyed, though the whole surface may be covered with ornament. We find the best specimens of ornamental design, as a class, are of the Renaissance, but the great bulk are of the Louis XIV. varieties: classical art is scarcely represented, and the Gothic is only very partially so. We have, indeed,

only three decided expressions of taste, the Classical, the Renaissance, and the Louis XV., for what we have of the Gothic we owe to sentiments distinct from ornament. These three tastes are very distinct: we have in the first, the classical or Greek, a thoroughly well understood detail, with a highly systematic and symmetrical disposition of these details: in the second, in the Renaissance we have also a well understood detail, but a prevalence of the bizarre, and of a profusion of parts; great skill of execution, but a bewildering and fantastic effect upon the whole; in the third, the Louis XV., we have a total disregard of detail, therefore a purely general effect. And this I believe to be a fair picture of the present general state of ornamental art in Europe, a condition out of which it is the task of the schools of design to extricate it; and if we may judge of the fruits of the French schools, it would appear the especial province of the English schools to perform this service; for the uniform practice of the French seems to show that they are too much absorbed in the execution of details, to give any great attention to distinct varieties of ornamental expression. If a general inferiority in design must be admitted, on the part of England, it is much less in the application than in the taste and execution of the design itself, irrespective of all style. However, in the more magnificent foreign productions, especially those of France, there is a disregard to usefulness, or the general wants and means, which very much detracts from the high credit the execution of the work would otherwise ensure. It would be no distinctive feature of the age to work well for princes: princely means have secured princely works in all ages; and the Exhibition will have done nothing for this age, if it only induce a vast outlay of time and treasure for the extreme few who command vast means. While the efforts of England are devoted, for the most part, to the comfort of the many, France has expended its energies as positively over luxuries for the few: it is an amalgamation of the two that we require,—fitness and elegance combined. When a costly work, however, is distinguished by exquisite taste, it is something more than a specimen of costliness, and a skilful work will be beautiful, not by virtue, but in spite of its materials. Good taste is a positive quality, however acquired, and can impart such quality in perfection to even the rudest materials: it is taste, therefore, that must ever be the producer's most valuable capital, and it is a capital that the English designer and manufacturer may very materially accumulate by a careful inspection of some of the more important foreign contributions in the Exhibition. I have only, then, to again caution you, that notwithstanding the unrivalled display of magnificence now assembled from all quarters of the world in Hyde Park, the great art of the ornamentist is still only partially represented, as compared with the aggregate of past efforts and achievements; that great styles, individually capable of as much display and variety as the whole of this unique collection together offers, are barely touched upon; that this vast store is at the student's feet, to be gathered into his granary, as the meadows spread their honey before the bees, if he will only extend his search beyond the reach of his hands. The time has perhaps now gone by, at least in Europe, for the development of any particular or national style; and for this reason it is necessary to distinguish the various tastes that have prevailed throughout past ages, and preserve them as distinct expressions; or otherwise, by using indiscriminately all materials, we should lose all expression, and the very essence of ornament, the conveying of a distinct æsthetic impression on the mind, be wholly destroyed. For if all objects in a room were of the same shape and details, the want of individuality would be so positive, that the mind would soon be fatigued to utter disgust. This is, however, exactly what must happen on a large scale, if all our decoration is to degenerate into a uniform mixture of all elements, or if we allow any one class of elements to engross our exclusive attention: nothing will be beautiful, for nothing will present a new or varied image to the mind.

TEACHINGS OF THE EXHIBITION.

For the following remarks on the instructive nature of the Great Exhibition, we are indebted to the columns of *The Builder*. It is, indeed, something to have entered that huge hive of the industry of all nations, and to have carefully examined its stores of intellect contributed by all quarters of the globe; to have seen the ingenuity that has been applied to productions of every kind more or less distinguished by their peculiar merits, and valued either for their elegance, their grandeur, or their utility, and to have noticed the diversity of thought and intelligence with which the genius of every country has displayed itself. Among its multiplicity of objects, every faculty of the mind is appealed to, as every faculty has therein been exercised; every taste is presented with the best specimen of whatever is its favourite subject for study; every form that it was possible to devise in order to gratify the desire of the fastidious or supply the wants of the wealthy, meets us; and every species of art and mechanism, simple or elaborate, is here brought to its highest degree of development. The student who is yet unknown —the man who has long exercised the fine skill of his hands—the mechanic and the artisan, each, amid the wonders enshrined in this palace, can add to his knowledge and to his experience. Such a living encyclopædia as this is a means of instruction, a lever of education, that was long wanting to the solitary and unassisted student, who, being ignorant of what former ages and countries *had done*, could not tell what it was in the power of mind *to do*. The fragmentary and scattered forms in which knowledge was conveyed to him served rather to bewilder than enlighten. The present sons of industry have not, however, to bewail this deficiency, nor to labour under this disadvantage; a glorious edifice being now open to them condensing all the discoveries of science, and all the conquests of the mind. It is in this Exhibition that all see fresh motives to industry, and further inducements to excellence. The opportunities it offers for study to visitors in general, considering how much knowledge, artistic and mechanical, natural and artificial, must come by sight, are not to be slighted; but the professional carver, sculptor, and draughtsman, appreciate the opportunity it offers to them for directing their talents. To all engaged in the arts, it is a standard for correcting and advising such as have bent their minds in a wrong channel, or seen with imperfect eyes; who have made a bad use of their powers, and not employed them in the direction to which they were naturally inclined. Let all such profit themselves by comparing what they *have done* with what they *might have done*. This is one of the great teachings of the Exhibition. It is, we think, indisputable, that all may at least inform their minds by the contemplation of such accumulations of beauty and magnificence. Even they who do not seem to have any interest for such things, will go away impressed with ideas new and uncommon; with feelings, likely, perhaps, to refine their natures, more than those of a different character, to which they are every day familiar; and wherever there exists the capacity to receive the influences of this place and its contents, noble ideas will assuredly be admitted into the mind of the recipient. And whilst, in an industrial and manufacturing point of view, the effect of this Exhibition will be beneficial, it at the same time is calculated to work moral results, which are of great importance from their bearing upon and being conducive to eminence. Whoever enters this spacious and splendid pile with notions of vanity or arrogance, will certainly receive a check and a cure—he will feel his littleness by the superiority that surrounds him everywhere, to which he will be forced to make comparison. This is a useful teaching indeed. Whoever, also, hopes for those triumphs of hard-working and patient labour at which he gazes, will be induced to work himself with greater earnestness than heretofore, to qualify himself for the abilities necessary for their attainment. Whoever thinks he is

great in criticism, and can make or mar a reputation, will experience the difficulty there is for the best trained judgment deciding between the conflicting and distracting pretensions of such a vast variety of objects. Here is another great teaching; and with it an argument, if one were needed, in favour of this museum of all nations, and for repeating attempts of this kind, even on a smaller scale; for thousands who have not the inclination to form their judgments and modulate their feelings to works of art and ingenious fabrications through books and the theories of men who comment and criticise upon them, would yet put themselves to some personal trouble and inconvenience for seeing and judging for themselves such a pile with such attractions. And it cannot be denied but that they are under the best tuition. Beautiful works proclaim their own merit, and force conviction. They have the force of examples seen by the eyes over theories read unwillingly by the mind. They *show* the substance of true taste, and what it is: your critics and books can only *tell* it.

CHAPTER VII.

VOLTAIRE IN THE CRYSTAL PALACE.

RAILWAY TRAVELLING—REFLECTIONS ON THE STEAM ENGINE—THE PLOUGH AND THE PRINTING PRESS—ANCIENT AND MODERN CITIES—JEWELS AND GLASS BEADS—ITALIAN AND ENGLISH SCULPTURE—FRENCH TASTE—THE MEDIÆVAL COURT—LUCIFER MATCHES—THE TIMES NEWSPAPER—FIRE ARMS—MODEL OF A PYRAMID—PRINCE ALBERT'S MODEL LODGING HOUSES, ETC., ETC.

"Millions of spiritual creatures walk the earth
Unseen, both when we wake, and when we sleep."—*Milton.*

Such is the declaration that the immortal bard puts into the mouth of our great progenitor. And our old friend, Christopher North, bears evidence, in one of his learned lucubrations, to the truth of the statement, inasmuch as he testifies from ocular experience, to the appearance, within the walls of the Great Exhibition, of a *revenant* of considerable celebrity in the world of letters. We allude to the philosopher of Ferney, the shrewd, the keen, the inquiring, the sarcastic Voltaire. In fact, our neighbours north of the Tweed have always been celebrated, not only for the keenness of their optics for the second sight, but also for their prompt recognition of ghosts and wraiths of every description. Hence we readily enter into the statement of our contemporary respecting the appearance of this sceptical personage, who, it seems, was resolved to ascertain for himself the truth of the wonderful accounts he had heard of the Crystal Palace, whether in the regions above or below we do not take upon ourselves to inquire. "It was impossible," says our friend Christopher, from whose columns we extract the following passages, "to keep him quiet—there would have been no peace in the shadowy regions of the departed, unless this energetic, inquisitive, self-willed spirit, had been allowed to have his own way; and Voltaire, rising to the earth in the city of Paris (where else could his spirit rise?) started by train to see the Great Exhibition. Reports had reached him that in a Crystal Palace, not far from the Thames, were to be assembled specimens of the industry of all nations—nothing less than a museum of the works of man. But it was not this only that had excited the curiosity of the philosopher of Ferney. Rumours of a new era of society, of unexampled advancement or development of mankind, had from time to time descended into the territory of the shades, and had kindled a desire

to revisit the earth. * * "Progress! progress!" muttered our returned philosopher to himself, as he whirled along upon the railway. "What a din this age makes about its progress! it travels fast enough, if that were all. Rapid progress of that kind. For the rest—let us see whether the world is revolving in any other than its old accustomed circle." After taking a brief survey of the building itself, and expressing, in various muttered ejaculations, his admiration of its marvellous size, its lightness, and its wonderful adaptability for the purpose for which it was erected, the quondam lord of Ferney proceeded to the department where the machinery was exhibited. Here a professor of mechanics was so courteous as to explain to him the various processes of our cotton manufacture. He explained the power-loom, the mule, and I know not what other contrivances beside; and, pleased with his intelligent listener, he launched forth into the glorious prospects that were opening to human society through the surprising mechanical inventions that had illustrated our age. To labour man was born, he said, but we should take the sting out of the curse; it then would cease to be toilsome, cease to be degrading cease to be incompatible with refinement of manners and intellectual culture. Stepping through an open door into a neighbouring department, the professor found himself in the presence of a gigantic locomotive standing upon its railway. "Here," he exclaimed, "is one of our iron slaves; we feed him upon coal; he bears us, a thousand at a time, with the speed of an eagle, from town to town, from county to county. What limit can you set to human progress when you reflect upon such an engine as this?" Voltaire did reflect. "Very clever are you men," he said; "you cannot exactly fly—you have not yet invented wings—but you go marvellously fast by steam. No spirit need travel quicker. But methinks there is something hypocritical and deceptive in this obedient engine of yours. Goes of itself, you say. Does it? Your iron slave wants many other slaves, unfortunately not of iron, to attend on it; on this condition only will it serve you. No despot travels with so obsequious a train, and so subservient, as this quiet-looking engine. Putting my head out of the window of my railroad carriage, whilst we were yet at the station, I saw an industrious mortal going from wheel to wheel with a huge grease-pot, greasing the wheels. He greases wheels from morning to night; eternally he greases. Another man trims lamps incessantly; I saw him with a long row before him feeding them with oil; in oil he seems himself to live. Of engineer and fireman I could not catch a glimpse, but I saw a crowd of men employed continually in putting boxes and carpet-bags from a truck into a van, and from a van into a truck. Not much intellectuality there. And when the shrill whistle was heard, and we started, lo! there was a living man standing on the bank, acting as signal-post—with arm outstretched and motionless, a living signal-post. Most useful of men no doubt, if mortal necks are worth preserving, but his occupation is not such as could possibly be intrusted to one who might wander into reflection. The railroad train runs, it seems, not only upon those hundred wheels of iron which we see and count, but on a hundred other wheels forged out of human flesh and blood."

"You are perfectly right," said a pale melancholy Englishman who was standing beside them, and had overheard this conversation. "We are altogether in a wrong course; we are making machines that enslave ourselves, and bind us down to all the toils and all the social degradations of slavery. We must go back to simplicity. We must learn to limit our desires, and discard fictitious wants. Then only can the reign of Justice commence. If all men were contented with the gratification of the simple wants of nature, all men might be equal, and equally enlightened. Our task ought now to be not to invent more machines, but to select from those already invented the few that are really worth retaining. For my part, I find only two that are indispensable." "And what may they be?" said the professor of mechanics, with a smile of derision. "The plough

and the printing-press. With these two, and the principle of justice, I would undertake to make a happy community of human beings. Bread and books! what more do we need? Here is supply for mind and body." "No! no! no!" exclaimed Voltaire, who retained all his horror of this return to primitive simplicity. "Get as much civilisation as you can. Let as many enjoy it as can. If you had nothing but the plough, you might dispense with your printing-press as well. What on earth would your rustics have to write about? Bread and books! and what sort of books? Bread, books, and an Egyptian priestcraft—pray complete your inevitable trio." "Sir, you blow hot and cold with the same mouth. Our mechanical inventions are but rivetting their fetters on the industrial classes: you see this; and yet when I would break the machine you interpose." "He who talks on man must blow hot and cold with the same mouth. He has always lived, and always will live, in the midst of contradictions. Let us hear nothing of this return to simplicity and ignorance. No savage happiness for me. The Fuegans—so a traveller from South America once told me—when they are hungry, kill a buffalo, and, scraping the flesh from off the bones, make a fire of these bones to roast the flesh withal. What admirable simplicity in this self-roasting ox! Here is your golden age at once. I recommend to you a voyage to Terra del Fuego." "Are we, then, said the plaintive idealist, "to see nothing in the future but the contradictions and turmoils and iniquities of the past?" "And what men endured in the past, why should not you also and your posterity endure? The type of civilised society has been again and again presented upon the earth: we may improve, we cannot materially alter it." "There," said the professor of mechanics, "I must be allowed in some measure to differ from you. I observe that you have a due appreciation of the arts and inventions that contribute to civilisation; but you do not sufficiently understand the enormous progress that this age has made beyond all others." "Pooh! pooh!" said his impatient auditor, "there is a vast difference between civilised life and savage, but the progress you make afterwards is but slow and slight. You take a wild country, and from a swamp reduce it to a cultivated plain. Corn is growing in the field. The change is immense. Well, you may grow still more corn in the same field, but you can never produce any other change like that which it has already undergone. Between the wild Celt or Saxon, and the civilised inhabitants of Paris or London, who would not acknowledge the difference? But I would as willingly have lived in the Paris of a hundred years ago, as in the Paris of to-day. A wealthy citizen of Bruges or of Florence in the fifteenth or sixteenth century passed, I suspect, as rational, as agreeable, and as dignified a life as the wealthy citizen of your own monster metropolis in the nineteenth century. He would not enjoy quite such immense feeding—not such luxurious banquets as your Guildhall and your Mansion-house can boast, where you spend as much at a dinner as would have built the Parthenon—but he, perhaps, found a compensation in a keener zest for art: at all events he lived in a city which had not quite blocked out every charm of nature, in which every green thing had not withered, and where the sky was still visible. At Athens and Rome, and, for aught I know, at Babylon and Thebes, men have enjoyed life as keenly, and lived as wisely as they do here. Many are the eras of the past where you may point to the *city*, the seat of government and the arts, and the neighbouring cultivated *country* where the peasantry have enjoyed the protection, and shared to some extent the mental culture, of the town. Such has been the type of civilised society hitherto; nor is it always that the last instance in order of time presents the most attractive picture.

"I walk," he continued, "through the spacious streets and squares of London. I see the residences of your wealthy men: the exterior is not pleasing; but if I enter, I find in each what deserves to be called a domestic palace. In these palatial residences,

many a merchant is living amongst luxuries which no Roman emperor could have commanded. I lose my way amidst the dark, noisome, narrow streets and interminable courts and alleys of this same London. Each house—each sty—swarms with life. And oh, heaven! what life it is! They are heaped like vermin. They prey upon each other. How they suffer! how they hate! Full of corroding anxieties, they endure a wretchedness and torture which no Roman emperor could have inflicted upon his slaves." "But, sir——" "I tell you I have seen the beggar at Naples. He is a prince. He lies in the sun, on the earth—it is his home—and the open sky above him, it is his. He rises to beg, or to work, or to steal—he does either with a savage energy—then lies down again, no leopard in the forest more carelessly dispread. But poverty in England is steeped to the lip in bitterness, in care, in hatred, in anxiety. When bread comes, it is eaten with fear and trembling for the future. Tears are still flowing upon it. Yes, you have indubitably progressed thus far: you have made hunger reflective." "But, sir, we are at present in a state of transition. Say that hunger has become reflective: in the next stage of our progress the reflective man will have protected himself against the chance of hunger." "A state of transition! I am charmed with the expression. What age ever existed that could not have accounted for all its sufferings by this happy word, if they had known it? Oh, the world, I think, will be very long in a state of transition! But, gentlemen, we must use our eyes, as well as other organs—however gratifyingly employed—in a place like this. Pray, what is that," he inquired, as they stepped into the central avenue of the building, "round which so eager a crowd is collected?" "That is the great diamond—the Koh-i-noor, as it is called—once the boast of some Great Mogul, now the property of the Queen of England." "Oh! And what is that to the right, where a crowd almost as dense is congregated?" "They are the jewels of the Queen of Spain." "And on, further to the left, I see another crowd into which it is hopeless to penetrate." "They surround the blue diamond, that has been valued at I know not how many thousands of pounds." "The children!" cried Voltaire. Then turning to his professor, he added, "You who will make all classes reflective, pray begin with these gentlemen and ladies. When your celebrated navigator, Captain Cook, visited the savage islanders of the Pacific Ocean, he gave them glass beads in exchange for solid provender. We smile at the simple savages. They were reasoning philosophers compared with our lords and ladies. The glass bead was not only a rarity; it was a novel and curious production to the savage. A precious stone is no longer a novelty to any of us; and for the very important purpose of personal ornament it may be easily imitated or substituted. I defy you to find another element than simple ostentation in the extreme value we put upon our glass beads. They are merely the insignia of wealth. The children!—but men always have been, and always will be, children. I have frequently said it of my own Parisians, and, between ourselves, never liked them any the less for their being the most perfect children on the face of the earth."

Our visitor moved on to that end of the building which, to us, bears the name of the foreign quarter. He was not a little surprised to see the extremely tasteful and artist-like display which Austria and Bavaria made. A certain Parisian, thought he, once asked if it was possible for a German to have wit; at all events no one will ever ask whether it is possible for a German to have taste. And the descendants of his favourite, Czar Peter, did not fail to attract his attention. They, too, are running a race of luxury and civilisation. He entered into the little sculpture gallery of the Milanese and other Italians. There was the usual medley of subjects which a sculpture gallery always presents. Eve, the Christian Venus—Venus Repentant, as she might be called—here has a charming representative. Not only the expression of the face, but of the whole attitude, tells the sad history. She sits looking down, and shrinking within herself, as

if she would contract herself out of sight, if it were possible. Opposite is a head of Christ. Our critic paused with reverence before it; but an involuntary smile rose to his lips, as he observed that the artist, in his endeavour to make the head more and more placid and patient, had at length sent it fairly to sleep. Near it were Leda and her Swan, and Danäe waiting for her double shower of love and gold. Such is the medley we are always doomed to encounter in any collection of sculpture! From this Milanese gallery he hastened to the room devoted to English sculpture, that he might compare the genius of the two nations. The sculpture of the whole Exhibition—that which is displayed as pure art—is but of a secondary character; but our visitor found as much to please him in this room as amongst the Italians. Here were the lost children in the wood, whom the little birds covered with leaves. The poem is known throughout Europe, and the artist has translated it most faithfully into marble. Here is a mother or a nurse with a child, the child they call Bacchus; and Voltaire recognised with delight the Ophelia of Shakspere. Here she stands, leaning on the branch that will treacherously precipitate her into the stream; and the artist has, with singular felicity, succeeded in portraying, not only the beauty and the sorrow, but the bewildered mind of the love-lorn damsel. In the corner stood a head, designated *Il Pensieroso*, which, if the police had not been so vigilant, our visitor might have been tempted to purloin. Traversing the building, he soon returned to that part where his own countrymen especially make so great a display with their jewellery, their bronze clocks, the gilt ornaments of every description, their silks and velvets, and every article of luxury. He kindled for a moment with a sentiment of patriotic pride, as he noticed here the eminent position of his own France. Seeing so large a display of these articles, he asked one of his countrymen what could have induced him and others to bring so great a number of these costly products accross the Channel. What could have been the motive, he asked—was it honour or was it profit? "Both," was the reply. "We bring to exhibit, and we bring to sell. It is pleasant to take the conceit out of our neighbour, and his money at the same time." "But what has induced your neighbour to invite you here, with all these splendid silks and trinkets?" "*Ma foi!* I know not. Perhaps he wanted a lesson in good taste, and was willing to pay for it. If you look down the building you may catch, even at this distance, a glimpse of the gewgaw splendours of Birmingham. With an unlimited supply of tinfoil, a North American savage would do better." "Ha! monsieur, you must instruct your neighbour, and he, as is just and fit, will pay for his instructions."

Voltaire had no sooner ceased speaking than he found himself revolving a more serious train of thought. He sat himself down on a bench, and surveyed as much as he could, at one glance, of the whole building and its contents. "The industry of all nations!" thought he. "It is well; but what I see here most prominent, is the luxury of all nations. Did England really need a lesson in luxury? And if her taste in jewellery and upholstery has been defective, is any very great end answered by highly cultivating such a taste? What other countries may learn from England I know not; but she herself can learn nothing from this Great Exhibition but the lesson my countrymen are so willing to teach her: she can learn only how to spend her money in objects of luxury, in what they call ornamental and decorative art. Pure art I honour;" thus he continued his soliloquy. "I honour all the fine arts. From the man who designs a temple to him who engraves a gem; I honour all who contribute to the cultivation of the mind through the love of the beautiful. Men must have emotions for the soul, as well as food for the body; and if they do not find these in poetry, in music, in painting, they will seek them exclusively in those gloomy superstitions which afflict while they agitate, and render men morose and uncharitable. I honour the arts, and I

respect also every useful manufacture which adds to the comfort of daily existence; but there is a province of human industry lying between these two, which is neither fine art nor useful manufacture, which I do not honour, for which I have no respect whatever—ornamental nonsense, for which I feel something very near akin to contempt. Men decorate their houses and their persons with costly fooleries. I put my elbow on the mantelpiece, and am in danger of precipitating some china mannikin. Huge vases encumber the floor, which never held, and never will hold, anything but the chance dust that is swept into them. Absurd tables are set out to be covered with knacks and toys, that have not even the merit of amusing a child. The fingers are squeezed into rings; holes are made in the ear for the jeweller's trinket; there is no end to the follies committed in what is called decoration and ornament. Say that such things must be, is it a purpose worthy of the energies of a great people to increase and spread abroad the taste for fantastic upholstery and useless china, and all the imposing splendours of the haberdasher and the silversmith? Is it a very magnificent project to invite competitions in lace and embroidery, and or molu, and all the sumptuous trivialities of a lady's boudoir? Art! art! exclaims one. Do you value as nothing the art bestowed on these articles? Not much. If you model a human figure, of man or woman, let it be done for its own sake. A true work of art is a sufficient end in itself. Must I have the human figure scattered everywhere upon every utensil I possess! Can I not have a time-piece but a naked woman must sprawl upon it? Is this doing honour to the most beautiful of forms, to make it common as the crockery or drinking cup it is called in to ornament? Must it support the lamp upon your table, or be twisted into the handle of a teapot? If I pour water from a ewer into a basin, must I seize a river-god by the waist? Have you nothing better to do with the head of a man than to model it upon every prominence, fasten it upon the lid of your coffee-pot, or squeeze it under the spout of your jug? In all this taste I find little else than mere ostentation. Would you have sumptuary laws? says one. No; but I would have a sumptuary opinion, if there was any getting it."

A part of this soliloquy had been unconsciously uttered aloud. "It all does good for trade," said a bluff neighbour who had overheard him; "rich men should spend their money." "Not exactly upon absurdities, I suppose." "Anyhow they should spend their money. I am a tradesman—a Manchester man; I care nothing for these fine things myself, but I say, that rich men ought to spend their money." "And whether the articles can be of the least service to them or not?" "It does good for trade all the same." "Not all the same. Suppose he lent it to a respectable capitalist like yourself, a Manchester man, who would employ it in some useful manufacture, in multiplying articles of substantial service to mankind, of which there is still by no means a superfluity, would not this be doing good for trade, and in a better manner?" "Ay, ay! and bring him a good per centage for his money. You are right there. Beg pardon, sir, but you are not such a fool as I took you to be. Let the nobleman have his grand house and his garden, his pictures and statues, but if he has more money than he knows what to do with, let him lend it to the industrious capitalist, who will multiply useful things for the community at large. Profits, to be sure, would be somewhat less, but everything would be cheaper. I see, sir, you are no fool." Voltaire, bowing in acknowledgment for the compliment he had received, rose and threaded his way through the crowd, passing the gold and velvet of Persia and Turkey and India, and not forgetting to pay his respects to the Chinese. Other people cultivate the beautiful, or intend to do so; it is fit, thought he, that there should be one people who cultivate the ugly, the monstrous, the deformed, and with whom the grotesque stands in the place of the graceful.

What our visitor thought of all the various works of art he encountered, as well gigantic as minute—the Amazon, the lion, the archangels, who in several places are killing Satan or the dragon, with the utmost calmness, and with the least effort in the world, it were too long to tell, even if his criticisms were worth preserving. We follow him into what is called the Mediæval Court. Here altar and crucifix and sacred candlestick, and all the paraphernalia of Roman Catholic worship, arrested his attention, and somewhat excited his surprise. Well, said the philosopher to himself, I have always remarked that the spirit of trade is an admirable counterpoise to the spirit of bigotry. I have heard of the English people making idols for exportation to heathen countries; dealing with them as articles of commerce. They despatch a vessel to some barbarous coast, and in the cabin they carry out a missionary and his tracts, to convert the inhabitants, and in the hold they have an assortment of idols from Birmingham to compete with the native manufacture. Nothing so liberal as the spirit of trade. Now, here these English Protestants are making what they think most superstitious implements for the benefit of some Roman Catholic neighbour. "Pray," said he, addressing a sleek stranger, whom he thought likely to give him the required information, "Pray, for what country may these be intended? France can supply herself; to what people do you export them?" "Hush! They are not for exportation," said the grave gentleman, casting his eyes down upon the ground, and speaking in a plaintive and subdued voice. "They are for the English themselves." "But the English are Protestants." "Say rather Anglo-Catholics. But they are returning, slowly and doggedly, to the true fold. You, who are a foreigner, will be rejoiced to hear this." Voltaire took largely of his snuff. "If it pleases you, I will be rejoiced. They will read my *Cyclopedia* now. At last I shall be understood in England." * * * *

Our philosopher now makes his escape from his theological friend, and again plunges among the machinery, where he still finds his professor of mechanics, with whom he enters anew into learned disquisition; in the middle of their argument, however, the professor, for some incidental purpose, lit a common lucifer match. Voltaire had never seen the like before. He begged the experiment to be repeated. He examined the simple apparatus minutely; and asked for the old flint and tinder-box, that he might make comparison between them. They smiled at him. Such a thing did not exist. "Here is an invention," he cried, "which, as a real contribution to the comfort of life, far surpasses everything I have seen. Oh Lucifer! as they call thee, thou son of the morning, if I had had thee in a box by my bedside, how many hours should I have saved! how much anger and impatience should I have escaped! and François, how thy knuckles would have been spared! Verily, this is the greatest invention that has been made in the world since I—" But seeing that he was attracting to himself a degree and kind of attention from a staring and tittering audience, that was by no means agreeable, he broke off. Meanwhile, the professor, who talked on as incessantly and unweariedly as if he too were set in motion by the steam-engine, had already commenced his eulogium upon another instance of our mechanical invention. This time the machine was one calculated to interest Voltaire. It was a printing-press of the latest construction, worked of course by steam. He saw it in full operation. The type was arranged upon a large upright cylinder; four smaller cylinders, placed around it, bore the paper and carried off the impression from the types. At every revolution of the large cylinder, four sheets of printed paper were consequently delivered, for the edification or amusement of the world. Our ex-author watched the process, and was very much disposed to call for pen and paper, that he might give some *copy* to the machine. The professor continued his oration. "By a machine of this description, but of still greater power," he said, "the *Times* newspaper is printed, I tremble to say how many thousands in an

hour. Each paper contains matter that would fill an octavo volume. The debates in parliament that may have been heard at two o'clock in the morning, are that same morning laid on the breakfast-table of the country gentleman who is residing one hundred miles from the House of Commons. And not only have the speeches been reported and printed, but they are accompanied by well-written comments of the editor. Wonderful celerity!" "I hope," thought our listener, "that the orations are equally wonderful. They should be. From what I remember of such matters, I think I could wait a few more hours for them without great impatience; and perhaps the well-written comments would not suffer by the delay." Quitting the lecturer and the scene of his glory, Voltaire mounted the gallery. Here he encountered what, for a time, entirely subdued the captious spirit, and called forth all the natural energy and enthusiasm of one who had been poet, wit, and philosopher. This was the electric telegraph. He could scarcely contain his enthusiasm as he watched the index on one dial-plate, and saw the movement responded to by the index of a corresponding dial, and reflected that no conceivable length of distance would render the operation less certain or less instantaneous. Thought travels here with its own rapidity; manumitted from the trammels of space and time. Yet, after all, he added, it can be but human thought that travels on the wire.

Stepping on a little further, he found himself surrounded by improved fire-arms, muskets that would kill at the distance of five hundred yards, and many-barrelled pistols, which promised to deal half-a-dozen deaths in as many seconds. The cynical humour returned. "They are not all messages of peace and love," thought he, "that yonder electric telegraph will be employed to communicate. The old game of war is played at still, and, like the rest, duly provided with improved implements. And what is it I read on this label? 'A pair of duelling pistols.' Duelling, by the law of England, is murder. It must be a very dead law, when, in this industrial exhibition we have 'duelling pistols' thus distinctly labelled. 'Pistols for committing murder!' would have been rather a startling designation. It seems, therefore, that, in the public opinion, duelling is just where it used to be, just the same honourable custom, where men contrive to mingle in exquisite proportions the foolery of coxcombs, and the ferocity of savages. The progress seems to be all in the mechanical department." Our hero next encounters a Socialist and a member of the Peace Society, with whom he has a long and animated discussion. With his usual volatility, however, he abruptly breaks away from his adversary, and nimbly retraces his way along the gallery. In his haste he entered, unawares, into a wooden case, or closet, where there was exhibited an anatomical model, in wax, of the human figure. It was the size of life, and stood upright, with the breast laid open, exposing for convenient inspection the heart and liver, and all the other great viscera of the human frame. "Ha! ha!" he cried—"No change here. The same as ever—heart, stomach, and the rest of us; the same creature they laid in the pyramids, and burnt upon the shore, and deposit now in deep holes in the earth. No alteration here. Oh, those bowels! how often did they afflict me!" Apropos of burying, he was involved soon after in the examination of a new design for stowing away the increasing multitude of our dead. It was the model of a pyramid, to be erected of the same size as the greatest of the Egyptian pyramids, but to be erected after a very different fashion. For whereas the ancient pyramid was an encasement of stone enclosing the coffin of one man, in the modern pyramid every stone might be said to contain its dead. The area would be first covered with vaults built close to one another, on these a second area of similar vaults would be constructed, on these a third rising gradually to an apex. The project had something in it to please a reflective mind. How the two structures would contrast—the despot's pyramid and the democratic pyramid! What admirable

types they would form of the two forms of society, the memory of which they would severally perpetuate! In the one a people of slaves build an enormous mausoleum for one man, who is, as it were, a representative of the whole; in the other, a nation of freemen construct an eternal monument for themselves, simply by each man lying down in his place as he is called. * * * * * Spirit as he was, our visitor at length began to find himself exhausted by the multitude of objects which solicited his attention. He had seen enough, he thought, for one visit. But in quitting the Crystal Palace, the model lodging-houses erected by Prince Albert caught his eye. "This Prince Albert!" thought he; "I hear a great deal of this prince, and from all I hear there has not been on or near a throne, for many an age, so intelligent and accomplished a man. One must go very far back in the annals of England to find his parallel. This prince has equal intelligence and far more knowledge than my Frederick of Prussia, and Frederick could be a—— But I have forgiven him. Moreover, I had my revenge; after which one very sincerely forgives. Into these lodging-houses that bear the prince's name I must make some inquiries." He did so, and that with a rapidity and acuteness which soon put him on a level, in point of information, with the rest of the spectators. A prospectus of the society for building a better order of houses for the workman and the peasant was put into his hand. It did not fail to meet with his most cordial approbation: it was a scheme of judicious philanthropy worthy of its royal and enlightened patron. As he was withdrawing his foot from the step of the model cottage, he met, for the third and last time, the professor of mechanics, who here also was indefatigable in explaining and developing. Observing Voltaire, whom he now regarded in the light of an old acquaintance and antagonist, he determined to push the advantage which their present subject of examination gave him, and he enlarged triumphantly on that philanthropic desire which had lately sprung up in the higher and middle classes of the community, to improve the condition of those who occupy a lower place in the social scale. * * * A hot dispute follows, in the course of which the professor becomes extremely irritable, and at length was about to overwhelm his ghostly antagonist with a burst of honest indignation, when he discovered, to his surprise, that his opponent had vanished from the scene. Voltaire went back quite contented that he had lived in Paris a century ago.

CHAPTER VIII.

MODERN PORTRAIT PAINTING—ITS DEFICIENCIES—PRÆ-RAPHAELITES—PORTRAIT PAINTING IN QUEEN ELIZABETH'S TIME—WINTERHALTER'S PORTRAITS OF THE QUEEN AND PRINCE ALBERT COPIED ON CHINA—BRIEF MEMOIR OF THE QUEEN AND PRINCE ALBERT.

Portrait Painting in modern times has undergone a considerable change; rigid truth has been laid aside for flattery, individuality has been generalised, age concealed, and all prominent peculiarities softened down and almost obliterated; plainness of features, though stamped with intellect, is abhorred by modern art as a crime, and must not be represented, so fastidious has the age become. Perhaps it will be one of the best results of the Præ-Raphaelite school to bring back the style of our leading portrait painters to the sobriety of truth. We want the express image, the *alter idem*, of such personages as are eminent in rank or talent, with all the sharpness of nature's coinage impressed upon the visage. If we have lost in one respect, however, we have gained in another—we have improved in elegance and simplicity; we no longer bedeck our female portraits

with all the feathers, and lace, and pearls, and jewellery that it is possible to load them with; neither do we pourtray our belles as Dianas arrayed for the chase, as Bellonas with spear and helm, or as piping shepherdesses with a lamb and crook. Let us peep into Hampton Court, and see the Virgin Queen, exhibited in every stage of life from infancy to age, and loaded alike in all with extravagant profusion of dress and ornament. At the same time the artist was rigidly exact in point of resemblance. It is curious to observe the difference between the poets and the painters of that period in their descriptions of royal personages. While the former launched out into the most extravagant praises as to their personal charms, their youth, their beauty, and their noble qualities, the latter, severely true, represented them precisely as they were. From the poetry of Spenser, Sir Walter Raleigh, Sir Philip Sidney, and others, one would imagine the beauty of an Aspasia outrivalled, the graces of a Helen eclipsed. But Holbein and Zucchero have given us very different ideas; they have faithfully and honestly done their best to immortalise the lineaments of their royal mistress, in colours as true as they deserve to be lasting. We feel grateful, too, that bluff old Harry had no courtly flatterer—no Sir Thomas Lawrence of the day—to soften down, to generalize his stalwart proportions, or to idealize his countenance. He stands before us with his bold swagger, and all his characteristic qualities, such as they were, unmistakeably delineated in his features. Again, in the cold and unbending severity of the "Elizabeth" of the same painter, who can recognise the "Gloriana" of Spenser, the unrivalled paragon of perfection, so celebrated in the poetry of the times. In fact, in his courtly adulation, in his disregard to truth, the portrait painter of the present day has lost ground, instead of advancing in his art, and will, consequently, have less claim upon the respect of future generations, who would prefer, one would imagine, to see their ancestors as they really looked and moved, and not as if their features were softened down and corrected according to Gay's precept in the fable, from the Apollo and the Venus in the studio of the painter. But it is time for us to leave the court of "Gloriana," and that of her august sire, and turn our attention to our own gracious Sovereign, whose portrait, with that of her illustrious Consort, we have the pleasure of presenting to our readers. They were both objects of much attraction in the Crystal Palace, and were painted on china, after the originals, by Winterhalter; that of the Queen having been executed by Madame A. Ducluzeau, and its companion by M. Antoine Beranger, of Paris; and to both of these artists was awarded the honourable distinction of a prize medal. As a fitting accompaniment we subjoin a brief memoir of the illustrious pair. The language of eulogy, when applied to kings and queens, generally becomes a direct falsehood, or subsides into unmeaning commonplace. The graceless Charles II. was "our most religious king." The royal libertine, who spurned from his home and heart, and consigned to an early grave, the wife he had sworn to cherish and protect, was hailed as "the first gentleman of the age;" and thus it has ever been. In the eyes of the world the graces of royalty amply compensate for its vices. When royalty is spoken of, the language of flattery only is heard; the censor speaks with bated breath. And thus the difficulty is increased when, as in the case before us, the voice of praise is but the voice of truth.

In our sketch—as is but right—we must give the first place to our Sovereign Lady, Queen Victoria. The incidents of her life may soon be told. Her father was his Royal Highness Edward Duke of Kent, fifth child of George III. Her mother was Victoria Maria Louisa of Saxe Coburg Saalfield, and was born at Coburg on the 17th of August, 1786. In her sixteenth year this amiable princess became the consort of the hereditary Prince Leiningen; but after the birth of two children she became a widow, and was married to the Duke of Kent on the 29th of May, 1818, with all due splendour, at Coburg, in conformity with the Lutheran rites. The illustrious couple immediately set

out for England, and on arriving at Kew palace, the marriage ritual was again performed according to the service of the Church of England. "This," says a writer in the *Annual Obituary* for 1821, "must be allowed to have proved a fortunate, for it was a happy union. They exhibited towards each other the most marked attention and regard." The result of this union was the birth of her most gracious Majesty Queen Alexandrina Victoria the First. In eight short months the mother was again a widow. The Duke of Kent expired on Sunday, the 28th of January, 1821, one week previous to the demise of his royal father, George III. The childhood of the princess was passed under the guardianship of the Duchess of Kent, who, in every respect, appears to have been well qualified for the task. The Queen's governess was the companion and friend of the duchess, the Baroness Lehzen; and one better adapted for fulfilling the duties of her situation could hardly have been selected. The princess was early taught to consider herself as the possible future depository of a trust to be exercised only for the good of the whole community; and when, in the course of time, the succession to the throne became no longer a matter of speculation, the additional aid of the late Bishop of Salisbury, subsequently assisted by the Archbishop of Canterbury and the Bishop of Lincoln, was invoked. At the age of nine years the princess had made considerable progress in the ordinary branches of polite education. She could understand the French, Italian, and German languages. But her *penchant* was evidently for the fine arts, more particularly music, for which, from her earliest childhood, she displayed considerable taste. We are told, on one occasion, the first, we believe, of the kind—Beethoven's celebrated "Hallelujah to the Father," being performed before her royal highness,—when that beautiful passage, "The exalted Son of God," burst upon her astonished ear, she manifested very great emotion. For several minutes after the conclusion of the chorus her royal highness seemed spell-bound, as though a new theory had suddenly been propounded to her imagination; and it was not till the expiration of some minutes, during which she seemed insensible to all around her, that she was able to give expression to her feelings of delight. A letter describing the confirmation of her Majesty, which took place July 30, 1835, may not be deemed uninteresting. "I witnessed," says the writer, "a beautiful touching scene the day before yesterday, at the Chapel Royal, St. James's—the confirmation of the Princess Victoria by the Archbishop of Canterbury. The royal family only was present. The ceremony was very affecting: the beautiful, pathetic, and parental exhortations of the archbishop, on the duties she was called on to fulfil, the great responsibility that her high station imposed on her, the struggles she must prepare for between the allurements of the world and the dictates and claims of religion and justice, and the necessity of her looking up for counsel to her Maker in all the trying scenes that awaited her, most impressive. She was led up by the king, and knelt before the altar. Her mother stood by her side, weeping audibly, as did the queen and the other ladies present. The old king frequently shed tears, nodding his head at each impressive part of the discourse. The little princess herself was drowned in tears. The ceremony over, the king led her up to salute the queen and the royal duchesses present."

The following authentic fact exhibits a most gratifying feature in the character of her Majesty. A man named Killman, who served in the capacity of porter to the late Duke of Kent, had a daughter much afflicted and confined to her bed. On the evening of the late king's funeral, this young woman received from Queen Victoria a present of the Psalms of David, with a marker worked by herself, having a dove, the emblem of peace, in the centre, placed at the forty-first Psalm, with a request that she would read and derive from it the consolation it was intended to convey. The Queen is said to be passionately fond of children. The following anecdote went the round of the news-

papers some few years since as an illustration. Her Majesty commanded Lady Barham, one of the ladies in waiting, to bring her family of lovely children to the palace. They were greatly admired and fondly caressed by the Queen, when a beautiful little boy, about three years of age, artlessly said, "I do not see the Queen—I want to see the Queen;" upon which her Majesty, smiling, said, "I am the Queen," and taking her little guest into her arms, repeatedly kissed the astonished child. We give one more anecdote, as an instance of her Majesty's religious feeling. A noble lord, in this respect very unlike her Majesty, arrived at Windsor recently late on Saturday night. "I have brought down for your Majesty's inspection," he said, "some papers of importance; but as they must be gone into at length, I will not trouble your Majesty with them to-night, but request your attention to them to-morrow morning." "To-morrow morning?" repeated the Queen; to-morrow is Sunday, my lord!" "But business of state, please your Majesty"—"Must be attended to, I know," replied the Queen; "and as, of course, you could not have come down earlier to-night, I will, if these papers are of such vital importance, attend to them after we come from church to-morrow morning." On the morrow, much to the surprise of the noble lord, the sermon was on the duties of the sabbath. "How did your lordship like the sermon?" inquired the young Queen. "Very much, your Majesty," replied the nobleman, with the best grace he could. "I will not conceal from you," said the Queen, "that last night I sent the clergyman the text from which he preached. I hope we shall all be the better for it." The day passed without a word on the subject of the papers of importance, and at night, when her Majesty was about to withdraw, "To-morrow morning, my lord," she said, "any hour you please, as early as seven if you like, we will go into these papers." His lordship could not think of intruding at so early an hour on her Majesty; "nine would be quite time enough." "As they are of importance, my lord, I would have attended to them earlier, but at nine be it." And at nine her Majesty was seated ready to receive the nobleman, who had been taught a lesson on the duties of the sabbath, which it is to be hoped, he did not quickly forget.

But we must return to our narrative. On the decease of her uncle, King William IV., June 30, 1837, her Majesty succeeded to the throne. On the 21st of the same month she was proclaimed, and on the 28th the ceremony of her coronation was performed. But we now come to an event of more importance—her marriage with Prince Albert, which took place February 10, 1840. It is time that we say something of the Prince, who is the husband of our Queen, the father of our future kings, and to whom we are indebted for the idea of the Great Industrial Exhibition. His Serene Highness Prince Albert Francis Augustus Charles Emanuel, Duke of Saxe, Prince of Saxe Coburg and Gotha, was born on the 26th of August, 1819, and received the first rudiments of education in the Castle of Erenburg. His father was one of the numerous honorary princes with which Germany abounds. Before the French invasion there were 300 of these principalities. At the Congress of Vienna, however, their number was reduced to 38. Besides its separation into states, Germany was divided by Wenceslaus, in 1307, and by Maximilian, in 1500, into nine grand sections, called circles. Of these two are comprised in Saxony Upper and Lower. In Lower Saxony we find Coburg Gotha, a territory not very large, but very much improved since the accession of Prince Albert's family. It is the most southern of the Saxon independent states, and is surrounded by Schwartzburg, Meiningen, Hildeburghausen, and Bavaria. The valley of the Itz forms the greater part of its territory. The Thuringian mountains stretch along the northern boundary of Coburg, which is only about one-fourth larger than Rutlandshire, having an area of not quite 200 square miles in extent. Joined, however, to Gotha, the territory of the duke equals in size the county of Dorsetshire, having a surface of a thousand square miles.

Much of this is covered by mountains and forest land. As to Prince Albert's family, we may here briefly state that the Duchess of Kent is his aunt, and Leopold, King of the Belgians, his uncle. We may further state, that some of his ancestors were noticeable men. In the dimness that overhangs the days of Charlemagne, we faintly perceive a Saxon chief named Wittekind, who for thirty years defied that prince's power. From his loins sprung the race of which Prince Albert is a younger son. All readers of Luther's life know how he was befriended by the Elector of Saxony, Frederick "the Wise," John "the Constant," and John Frederick, "the Magnanimous." Prince Albert boasts these men as his ancestors. Their blood floats in his veins, and he is true to the faith they held. We have already stated that Prince Albert received the rudiments of his education in the Castle of Erenburg. His masters were chiefly selected from the College of Coburg, and his proficiency was of the most signal character. After the death of Prince Albert's mother, Dorothy Louisa Paulina Charlotte Frederica Augusta, daughter of Augustus, the last duke but one of Saxe Gotha Altenberg, while his father was engaged in arrangements for a second alliance, it was thought expedient that the Prince should be removed for a time from home, and he became the visitor of her Royal Highness the Duchess of Kent, and the fellow-student of the young Princess, whose heart and hand he was afterwards to share. Who knows but that the seeds of that attachment were then sown which rendered the after marriage of so different a character to what royal marriages generally are! Be this, however, as it may, Prince Albert, who had completed his eleventh year, partook of the lessons in the English language, music, and the various sciences, which were given to his illustrious cousin. Fifteen months were thus spent, when, after his father's second marriage, he returned home. So assiduous was the Prince in his application to study, that at the age of seventeen he passed with *éclat* an examination which admitted him into the University of Bonn, where his education was completed, and where, owing to his amiable manners and propriety of conduct, he became a general favourite.

When, at the close of his university career, Prince Albert returned to his father's court, the inhabitants of the duchy vied with each other in doing honour to the event. His entry into public life was celebrated by poems, balls, illuminations, and rejoicings of all kinds. Soon after the Prince paid a second visit to this country. The occasion was the coronation of her Majesty. Amongst the guests brought together by that event, were no visitors more popular than the Prince and his illustrious sire. On his return the Prince prepared for a tour in Italy, where he spent the winter of that year. Already it is probable that the event which was to raise him to so high a rank was in contemplation. It is said, on his return from Italy, the first object that met his eyes on entering his apartment, was a portrait of her Majesty, which had, during his absence, been sent over for his acceptance from the Queen. At any rate, coming events did cast their shadows before. Hints were dropped by our "own special correspondent," and at the beginning of October, 1839, Prince Albert embarked with his brother, Prince Ernest, for his third visit to London. During this sojourn all doubts were put to flight, and on the 2nd of November following, her Majesty, at a court held at Buckingham Palace, declared that the Prince was the husband of her choice. The course of royal love did run smooth, and on the 10th of February, 1840, the service, read alike over the highest and the lowest in the land, joined together the royal pair. The issue of that marriage are—1, Victoria Adelaide Mary Louisa, Princess Royal, born November 21, 1840; 2, Albert Edward, Prince of Wales, born November 9, 1841; 3, Alice Maud Mary, born April 25, 1843; 4, Alfred Ernest Albert, born August 6, 1844; 5, Helena Augusta Victoria, born May 25, 1846; 6, Louisa Carolina Alberta, born March 18, 1848; 7, Arthur Patrick William Albert, born May 1, 1850. And whilst we are yet writing,

the birth of another prince is announced to us by the joyful firing of cannon on the occasion.

Prince Albert's fame preceded him on English ground. We had heard of him as a scholar, and a ripe and good one. A fellow-student of the Prince at Bonn, in a letter published in the *Times*, stated that the Prince was not only conversant with several European languages, but that he was deeply learned in the classics—that when at Bonn he had published an elegant volume of lyrics for the benefit of the poor—that his skill in painting was also considerable—and that in the composition of several songs he had shown himself a good musician. Proofs of these qualities have now become familiar enough. We were prepared for them, and not surprised at the manifestations of them; but we were not prepared for the untiring philanthropy, for the graceful domestic life, for the greatness of aim, evinced by Prince Albert. For the birth and realisation of that great idea which, more than any event in our own time, has aided progress, and has prepared the way for the brotherhood of man, the world must ever hold in veneration the memory of the Prince. No prouder monument could man desire. When the pyramids shall have crumbled away—when the monumental brass shall have decayed—when London shall be what Tyre and Sidon are now—still 1851 will be memorable in the annals of the world; and labour's sons will remember, as they toil at the loom, or the forge, or the plough, or the mine, who it was that vindicated for labour her proper place in the breasts of men—who it was that asked the world to do homage to peace and its attendant arts. With all our great institutions—with all our national celebrations—with all our national sympathies—have the names of Victoria and Albert become entwined. When revolutions raged in neighbouring lands—when blood was spilt in Vienna, in Paris, in Berlin—when thrones tottered to their fall—in our land peace and order remained secure. The future historian will have to tell how, when Victoria went amongst her people—whether she visited the cotton-spinners of Manchester, or the peasantry of Buckinghamshire, or in the presence of the denizens of every clime, in fitting manner, with the organ's peal and the voice of prayer, opened the Crystal Palace—all along the way glanced eager and admiring eyes, and everywhere were the teeming manifestations of a nation's loyalty and love. Already an inscription commemorative of the virtues of our Queen has been written by our poet-laureate. We extract from it the following appropriate lines:—

"Her court was pure; her life serene;
God gave her peace; her land reposed;
A thousand claims to reverence closed
In her as mother, wife, and queen.

She brought a vast design to pass,
When Europe and the scattered ends
Of our fierce world were mixed as friends
And brethren in her halls of glass.

And statesmen at her council met,
Who knew the season when to take
Occasion by the hand, and make
The bounds of freedom broader yet

By shaping some august decree
Which kept her throne unshaken still,
Broad-based upon her people's will,
And compassed by the inviolate sea."

We are not afraid, however, of challenging comparison between these lines and the following, to the same august lady, from the fair friend who has already more than once enriched our pages with her poetic effusions :—

When first I gazed upon that beauteous brow,
And thought how early it was doomed to wear
That "polished perturbation, golden care,"
Men call a crown, I only wept—but now
Far other feelings bid my bosom glow;
For thy sweet soul-enthralling smiles declare,
O regal lady, excellent as fair,
The varied blessings which around thee flow.
In virgin bloom beloved, as queen revered,
As wife, as mother, more, still more endeared.
Long for thy happy people may'st thou live!
As long thy gifted graceful consort prove
How rich a boon thy pure, thy generous love,
The choicest treasure even *thou* couldst give.

CHAPTER IX.

LETTERS OF M. BLANQUI—*concluded.*

LETTER VIII.: AUSTRIA—IMPERIAL PRINTING OFFICE—MAPS—BOHEMIAN GLASS—THE CRYSTAL FOUNTAIN—AUSTRIAN TYRANNY. LETTER IX.: LYONS—GREAT VARIETY AND RICHNESS OF ITS DISPLAY — GOLD CLOTH—CHURCH ORNAMENTS—CRAPES—CRAVATS—PORTRAITS WOVEN IN SILK—TASTE OF THE LYONNESE. LETTER X.: MULHOUSE—MUSLINS, JACCONETS, ETC.—BRILLIANT DYES—ENGLISH AND FOREIGN FACTORIES COMPARED—MACHINERY VERSUS WORKMEN—GOLD AND SILVER WORKMANSHIP — ENGLISH AND FRENCH COMPARED — VARIOUS STYLES DESCRIBED—BRONZE CHASING.

Let us now once more turn to the agreeable lucubrations of our learned friend, M. Blanqui.—I cease for a while, he writes, my studies upon French industry, in order to treat of Austria and her exhibition. Austria occupies the third rank of this universal congress; and she has appeared with a display of resources which has surprised the whole world, except those who do not form their opinion from public report, and who do not judge of great states from pot-house prejudices. Austria has taken the Exhibition in earnest. She has appeared armed at all points, and every day the interest excited by her various products, which betoken an industrial progress worthy of the attention of manufacturing nations, is increasing. Commencing with the most liberal branch of industry—printing—I am glad to say, that the imperial printing-office of Vienna has exhibited the most complete collection of specimens of all known types. This collection, which contains no less than two hundred and six languages or dialects, from Phœnician characters, the most ancient in the world, down to Japanese, is the most beautiful in Europe. It is of itself a sufficient answer to the charge of love of darkness, so often brought against Austria, and which for a long time has only been deserved by her new government. Austria has now entered upon a new path, and although the statue of Marshal Radetzki, which seems to watch, leaning on a sword, over the deposits of Austrian wealth, may appear an emblem little in conformity with the industrial progress of that country, there is no other, after France and England, which merits in the same

degree the attention of the man of study and of labour. The homage rendered to science and to human intellect by the branch of industry most capable of propagating them throughout the world, is assuredly a remarkable fact. When we reflect upon the immense quantity of linguists, of professors, of compositors, and of able workmen, which such a luxury of typography evinces, it will suffice to show the rank occupied by Austria in the great European family. The imperial establishment of Vienna possesses all the types of the characters printed in its workshops, and it has even exhibited the matrices used in their manufacture. The ingenious invention, by means of which the 80,000 signs of the Chinese language are formed by moveable type like music, has been particularly noticed. In a technical point of view, the art which the Austrians have attained of calculating the space occupied by every isolated letter, enables them beforehand to know what will be the precise extent of a manuscript when it is printed, and the imperial printing-office possesses already 150 millions of letters founded upon this system. Oriental scholars have greatly admired a work printed for the first time in Japanese with moveable types, and which, from its perfection, would rather appear to have been imported from that country itself, than reproduced in Germany. Austrian typography has placed itself in the first rank, through this magnificent display of richness. It would require a volume to give the simple catalogue of all she has exhibited of this nature, and that volume would require a knowledge of the subject which I do not possess. I regret to say that the national printing establishment of France has limited itself by opposing to this dazzling array of typographical productions a solitary volume of specimens, which have unquestionably their merit, but which do not seriously represent French typography. Austria has also displayed much luxury in her topographical productions, and her maps, already very celebrated, have maintained at the Exhibition the distinguished rank which they merit. When we leave the department of science to enter into that of the industrial arts, we find that Austria is making sensible and continuous progress. She manufactures iron skilfully in her works of Styria, the products of which are excellent. She has almost supplanted the town of Nîmes in the exportation of common shawls. She manufactures with great superiority ordinary woollen cloths; and, notwithstanding the legitimate reproaches which may be addressed to her on the subject of taste, her furniture has produced a certain degree of sensation at the Exhibition, owing to the spirit with which it has been executed. A country which manufactures as many as eight millions of scythes and reaping-hooks for exportation only, is evidently organised for extensive industrial pursuits. But it is especially in Bohemian glass that we recognise one of the most marked superiorities of Austrian manufacture; and this is the place to say a word about the condition of the glass manufacture as shown at the Exhibition. Three powers had the right to figure there with their distinctive characteristics—France, England, and Austria. France has abstained from exhibiting. Our beautiful manufactories of St. Louis and of Baccarat, managed by protectionists as skilful as they are bigoted, have sent nothing, whereas they might have sent masterpieces, which are perfectly well known, for there is a magnificent collection of them at the Conservatoire des Arts et Métiers, at Paris. We do not even hesitate to say, notwithstanding the ill-feeling of these gentlemen, that this collection would have sufficed to beat out of the field all the rival collections; but then, at the same time that we should have demonstrated the superiority of the French glass manufacture, we should have asked with what right it dared to levy tribute on the national consumers, and show itself so eager for monopoly, with which it can dispense exceedingly well? This is what their absence will not prevent us from asking. Besides that this absence is a grave fault at a moment when the question is to defend the honour of national labour, it is likewise a useless precaution, because the object of this intentional desertion will escape nobody. It is shameful to

hide yourselves when you are accountable to your country for the efforts which it has so liberally made to sustain you, and you lose all right to boast of your superiority when you refuse to appear at a gathering like that of London. Away then, gentlemen, with your pretensions to prohibit in France the entry of the glass of Bohemia and of other countries! Away, shameful taxgatherers, who levy upon us, by means of prohibition, abusive imposts; and who do not wish any one to discuss the strange budget by virtue of which you make us pay so dearly for what we ought to have cheaply! The moment is approaching when all producers will have to submit to the natural reign of competition. We will gladly make sacrifices for the state which guarantees to us security, roads, justice, or government; but what do you insure to us, shameless monopolists? Yes, here you would have shone beyond comparison, if not through the cheapness of your products, if not through their colour, at least through their form. You would have been recognised as worthy to occupy a medium situation between England and Austria. England seems to have gained the palm for white, Austria for coloured glass. The gigantic English fountain, upwards of thirty feet high, whose waters diffuse throughout the transept of the Crystal Palace a delightful freshness, is a masterpiece which you have not equalled. The large pieces of red Bohemian glass, of which you feared the rivalry, have in reality over yours only the advantage of cheapness. You would have united nearly all the merit except that of sparing our purse. My learned colleague, Michel Chevalier, was right when he said, "France pays you the poor-rate, and she does not owe it you."

I was sadly afflicted to find under the Austrian flag the products of a considerable portion of Italy;—the silks of Milan, of Verona, the beautiful stained glass of Bertini, the mosaics—everything, in short, that is left of art and grace to these unfortunate Italians. Austria has exhibited very fine specimens of her mineralogical products. She shines less in her cotton goods, which she would do well to leave alone. It is now-a-days the error of great nations to desire to procure, at any price, by means of forced labour, that which they might acquire cheaply by means of their natural labour. The printed calicoes of Austria are very ugly, and badly finished, notwithstanding the abundance of chemical productions which are exhibited in her name. Chemical products have followed the progress of science in nearly all the countries of Europe, and as I find occasion to remark it here incidentally, I have obtained at Manchester authentic proofs of the remarkable change which has manifested itself in England. One of the most eminent calico printers has shown us by his books the price which he pays for various substances, all of which evince a very advanced state of manufacture. Upon the whole, Austria occupied a very distinguished rank in the Universal Exhibition. There is, in the almost encyclopædic collection of her products, something masculine and severe, characteristic of the nation itself—a dissimilitude in strength as there is a diversity of races in the empire. The Bohemians, the Hungarians, the Italians, the pure Germans, who have co-operated in forming the union of Austrian industry, have each unquestionably preserved their peculiar physiognomy, and have lost nothing by being associated together. It will be hereafter interesting to study the special character of the labouring populations of all the countries which have appeared at this Great Exhibition—French, English, German, Spanish, American, and Oriental. You will see what curious relations exist between the workman and the work, and how much the lot of the former is connected with the success of the latter. But who, until now, has occupied himself to know exactly what is a workman? Workmen are flattered when they are strong—they are curbed when they abuse their strength; but to study them, to admonish them—who thinks of it.

LETTER IX.

I return, with the whole of Europe, to this marvellous exposition of Lyons, which will form an era in the history of industrial exhibitions. It is not sufficient merely to exclaim, like all the spectators, "Beautiful! magnificent! admirable!" it is necessary to enter into some details of this *event*, to analyze this catalogue of *chefs-d'œuvre*, and to attempt to make every one appreciate their import. The city of Lyons has not only outstripped all rival manufactories, if such there be—she has eclipsed herself; and you will be better enabled to judge of her strength from the simple fact, that only one-seventh of the Lyonnese manufacturers have presented themselves at the Exhibition; but these are the masters of the art. I have already told you that they had had the happy idea to lay aside their individualities for the purpose of appearing jointly. In truth, only one name is observed, that of the city of Lyons, which towers above all her products, and which appears to canopy them with her glorious renown. Union has constituted their strength, and these illustrious anonymous persons shine with a greater brilliancy than if they had posted up their own names. I could have wished that the Parisian furniture and paper-hanging manufacturers, imitating their example, had confined themselves to the following simple inscription: *Paris, Faubourg Saint Antoine.* That would have meant, "You take us for barbarians who only know how to destroy; behold how we work when we are not engaged in setting the four corners of Europe in a flame." And Europe would have answered, "Pray work, gentlemen; it is a great deal more beautiful."

Let us commence by doing justice to the two men who have presided over this brilliant Lyonnese exhibition, and who watch over it in London with paternal solicitude. They are Messrs. Arlès Dufour, member of the Lyons jury, and M. Gamot, inspector of silks. The one, full of fire, zeal, and ardour, is not an inapt representative of the operative impetuosity; the other, calmer, milder, and more thoughtful, resembles the genius of business. A goodly portion of the success of the great city is attributable to them, and it required not less than their united merits to bring to a happy issue this memorable exhibition, the preparations for which have not been unaccompanied with difficulties. I will describe to you how they have accomplished the delicate task which had been confided to them. They have collected under one head all the Lyonnese articles of the same description, without distinction of origin, and they have exhibited them in the best light. Thus, all plain fabrics are exhibited together, from the lowest priced to the most costly qualities. The cut or crisped velvets come next, followed by lutestrings, satins, and gros-de-Naples; then follow crapes, plushes, handkerchiefs, the figured and brocaded goods, and the fabrics used for churches and palaces. Every kind comprises all its varieties, and an attentive contemplation of the whole suffices to embrace, in the most complete manner, this immense family of woven fabrics which constitute the pride of the loom. We were the less prepared to admire what we are about to describe, inasmuch as the Paris Exhibition of 1849 had left in the minds of all an unfavourable impression of insufficiency and sorrow. It was evident that the city of Lyons had not figured in a manner worthy of herself at this industrial solemnity, and that she bore profound traces of the moral and political disorder caused by the events of 1848. I leave you to judge of the general surprise called forth at the aspect of the fabrics of incomparable richness and variety, which leave far behind them everything of the kind that has been attempted even in Lyons. Thus we may see, at the Crystal Palace, gold cloth with bouquets figured with silk, valued at 400 francs per metre, of workmanship so superior, that it may be considered as the most beautiful ever issued from the looms of Lyons.

Lyons has maintained and raised her old repute of her manufacture in fabrics for

church ornaments, and in woven and embroidered chasubles, with inlaying of precious stones. The figured goods naturally occupy in the Lyonnese exhibition the most important place, owing to the special character of their manufacture, the richness of their colours, and the grand beauty of their ornaments. It is from thence that all court robes, the princely hangings, and the decorations of the most splendid apartments, are sent forth. It will be a long time before we behold a more glorious industrial trophy than that of all these glorious evening dresses chosen among the *chefs-d'œuvre* of the loom, which represent the greatest difficulties overcome, together with the most delicate and most exquisite effects of pattern and mixture. There is not a nation in the world at present capable of uniting in the same degree the richness of material with the perfection of labour. Only one house has exhibited crapes—about seventy pieces—crisped crape, smooth crape, crêpe-lisse, *aerophane* crape, embroidered on white or in colours, of indescribable grace, lightness, and freshness. This department of the Exhibition is very dangerous for husbands. From morning till evening there are thousands of women in ecstasy, who laud them to the skies. It is, indeed, from the heavenly regions that these enchanting productions, variegated with a thousand colours, transparent and light, like the wings of the butterfly, would appear to have descended. Happy women of the earth! I cannot too often repeat it to you: when you throw over your beautiful shoulders these aërial scarfs, think sometimes of the poor girls who have made them. They are of your own sex, your own country, and your own religion; and they are often in want of the necessaries of life, after having provided you with superfluities! Not far from these treasures, the Lyonnese have exhibited an assortment of more than 200 pieces of cravats, neckerchiefs, and handkerchiefs—more durable and vulgar, but of which immense quantities are produced, and in the manufacture of which the Lyonnese industry has made considerable progress in the last fifteen years. Lyons has not excited less public attention by her three stalls of black plush for men's hats. Hats, such as are worn now-a-days in the shape of perfectly ridiculous cylinders, are very ugly, ungraceful, and incommodious; but they are not too dear; and it is owing to the improvements introduced in the manufacture of plush that we are enabled to renew them often and have them clean, until we wait the time that a form more rational and appropriate to our habits be given to them.

There is, in the Lyonnese exhibition, an article which it would be well to leave alone; these are the plain fabrics, with patterns printed in the warp, called *chines*, which have become very fashionable of late, though they but little deserve it. This bastard or misty style, very extensively used for ladies' dresses, imparts to the pattern something vague and stiff, which is contrary to the traditions of Lyonnese manufacture, so justly celebrated for the brilliancy and distinctness of its colours. Only one exhibitor has dared to compete with the Chinese crape shawls, and he has done wisely. The real China crape shawls are always a little heavy in their embroidery, even when the fabric upon which they are worked, which is seldom the case, is light. We may, therefore, attempt, with hopes of success, a competition which deserves encouragement. I may say the same of the special manufacture of silk cravats, in which the English excel to a degree to send a good many to the Parisian market. The watered silks exhibited are somewhat stiff, and are particularly suited to dowagers. There is another description exhibited, more rich than beautiful, and which is relieved, I might almost say inlaid, with gold and silver. The use of filigree wrought metals is only suited to the habits of the East. The Lyonnese shawls are going out of fashion, or are transformed, beaten out of the field, by the Parisian manufacture in point of elegance and materials, beaten by the printed shawls in point of economy, and by the fashion which is by degrees substituting the wrapper, the mantles, and wadded over-dresses, to everything that is not an Indian shawl. Lyons has exhibited figured shawls all of silk, and velvet shawls, for this winter, very

graceful and elegant. This is the inimitable stamp of Lyonnese manufacture, distinction, and elegance. I trust our English neighbours will pardon me, but all the printed shawls —real slop shawls—of which their women use such lavish quantities, would not be worn in Paris by respectable chamber-maids. It is with difficulty that such houses as M. Depouilly of Puteaux, Messrs. Gros, Odier, and Roman, of Wesserling, whose products are perfection itself, can obtain for their printed shawls a sale much more due to their lightness than to the purity of their printing. I shall only allude incidentally to a compliment paid to the royal family of England by the house of Potten and Rambord, consisting of three pictures, worked in silk by the loom, by the process of Maissiat, after Winterhalter, representing Queen Victoria, Prince Albert, and one of their children. There is also a portrait of the Pope, executed by the same process, from the manufactory of M. Coquillat. These pictures from the loom are veritable triumphs, which only tend to prove of what the shuttle is capable; but I do not admire them any more than the Gobelins pictures, which will never be industrial products, and which will always leave something to be desired as works of art.

That which, above all things, distinguishes the Lyonnese manufactures, is the supreme taste which characterises all its productions, like the natural element in which its workmen breathe; it is that series of traditions which neither the revolutions of fashion, the devastations of civil war, nor the savage distractions of politics, have been able to interrupt. There would appear to be a mysterious agreement among the innumerable hands which co-operate, often without knowing each other, in the perfection of these admirable fabrics. Warpers, designers, finishers, dyers—all lend each other, without effect and almost without method, mutual assistance. They produce masterpieces in the same manner as elsewhere vulgar things are produced, because it is their nature. Behold them at work: with what care they protect against the dust of the domestic hearth the immaculate whiteness of these satins, purer than silver—or of those crapes, the grain of which is produced by the pressure of a cylinder, covered with coarse leather, and rough to the touch! Nothing will be more interesting than the history of these men, when it shall be written with sympathy for them, without flattering or disregarding them. These men, at the present moment, demand their proper position; and they exhibit, as their title-deeds, the masterpieces which we have just admired. Have they deserved it or not?

LETTER X.

After the striking success of the Lyonnese exhibition, there is none comparable with that of the manufacturers of Mulhouse, who have also had the happy idea of appearing collectively, and whose products have excited universal admiration. Here, it is no longer by the richness of the material that the exhibitors have shone; it is by the elegance of their patterns, and, above all, by their splendid execution. Muslins, jacconets printed for gowns, printed cloths for curtains and furniture—these constitute the general staple of the Alsatian exhibition; but, with these simple articles, they have found the means of eclipsing all rival manufactures, and they no longer fear any competition. I do not think that I am unjust towards any one by asserting that the manufactures of Alsatia are the first of France, either as regards the importance of their own capitals, or those of the bankers who are interested in their operations. They have all taken manufacturing pursuits in good earnest, and do not devote themselves to them, like so many others, to make a small fortune, and then to retire into idleness. They live or die engaged in industrial avocations. The manufactories pass from father to son, constantly perfected by the intelligence of generations which succeed each other. At Mulhouse they study—they do not vegetate in the beaten track of routine; there are industrial and scientific

societies which endeavour every day to solve the economical problems of manufacturing labour, and which generally conduce to them by the most liberal means. What a difference from the exclusive, absolute, and prohibitionary manufacturers of the north! able men likewise, but untractable, and ever ready to regard their local interests as those of the whole of France. Alsatian industry was therefore destined to shine at the London gathering, and it must be admitted that it makes a better figure than that of Turcoing, Lille, and Roubaix, although these are represented by very honourable names, among which those of Messrs. Scrive, Frères, are foremost. Alsatia is a model manufacturing country. Machine manufactories, spinning, weaving, printing establishments—all are united there; it is the land of mechanists, designers, and chemists. Every especial degree of skilfulness lends each other a mutual aid, and hence there has resulted an *ensemble* of forces which has turned to the profit of their entire manufacturing system, and which attracts towards it, by preference, the attention of the manufacturing world. It is sufficient to name the Koechlins, the Hartmanns, the Dillfus, the Schlumbergers, the Zubers—all these really patrician families—to justify this well-merited preference. It is to Alsatia that the immense development which calico printing has taken in Europe during the last twenty-five years is owing; it is Alsatia which has spread the best modes of manufacture, and which unceasingly perfects them. Nowhere better than in this land are dye-stuffs more skilfully used; nowhere are dyers' weeds, madder, cochineal, and orchilla, applied with more brilliancy or fastness. Alsatia is like a great printing school, where the masters and foremen of all nations come to form themselves. It is, thanks to her, that Europe has become partial to those graceful and light fabrics which now-a-days decorate at such small cost all dwellings, and which so economically clothe all women. The exhibition of these masters of the art was therefore expected with impatient curiosity. It has been worthy of them in every respect, and their products have become the standard by which all other analogous products are compared, to class them suitably. It is, therefore, well to state, that all the calico printers of Europe are unanimous in admitting that Mulhouse carried off the palm over all printed calicoes, as Lyons did over all silks. This superiority is easier to state than to define. The English are great producers of printed calicoes; the Belgians, the Austrians, the Prussians, the Saxons, the Spaniards, and even the Turks, are so likewise; but, with the exception of two or three Manchester houses, all these manufacturers belong rather to the school of Rouen than to that of Mulhouse. The calicoes which they print are very ordinary, and cannot compete with ours. It is through the immense quantities which they produce, as well as the economy in the details, that the English are distinguished above all other nations engaged, like them, in calico printing. Their great advantage consists in operating upon enormous masses of goods, and not to waste an atom of matter. You should see with what solicitude they seek after economising a centime on a chemical product, on a number of yarn, on a colouring matter, and on freight; and with what art they transform this economy into profit, by millions, by multiplying their markets by demand, and demand by cheapness. This art is pushed in England to the most microscopic details, and veritable oceans of wealth are created there literally drop by drop.

Thus, all their factories have a severe and somewhat gloomy aspect of grandeur and simplicity. Not a single ornament—no columns, no architectural display. High and black brick walls, iron flooring, iron stairs, iron doors, iron barriers everywhere—rarely flowers and trees around a factory—never any fruit-trees. The abodes of labour, it must be admitted, are not very cheerful in England. In France, on the contrary, and particularly in Alsatia and Normandy, the factories have nearly everywhere an attractive appearance, full of charm. They are inhabited often nearly during the whole year by their proprietors; they are surrounded with gardens, or faced by beautiful avenues, or

bordered by beautiful waters; and their more artistic character is more in unison with their destination, and with French habits. I shall never forget, as one of the noblest specimens of the kind, the beautiful factory of Messrs. Zuber at Rixheim, near Mulhouse, with its large spacious courts, shaded by magnificent sycamore trees, looking more like an Italian villa than a manufactory of paper-hangings. More not less remarkable instances might be quoted at Thann and Cernay. It is, therefore, always by means of art and taste that we distinguish ourselves, and that we compete with our rivals. They shine with the compass—we with the pencil. They derive their profit from fuel, from iron, from the mass of the products manufactured, from the greater facilities of credit amongst them; our profits are derived from our designs, from our inventions in matter of colour and form. They *force* the buyers by lowness of price—we seduce them by novelty. The prosperity of an English factory depends more on its master; that of a French factory more on its workmen.

It is evident that everywhere, where it is only necessary that machinery, almost perfect, such as those English looms of 1,200 spindles—monster machines, which move by themselves, which go, come, I might almost say, which reason—should work regularly, the capitalist and the mechanician alone suffice; but when the success of the manufactory depends upon the designers, the chemists, the finishers, the wealth of the master can do nothing; the genius of the workmen can do nearly everything. It is this value of the workmen which political economists have called their *moral capital*—infinitely greater in France than anywhere else. Thus, the magnificent sideboard executed by Fourdinois, and which has produced such a great sensation at the London Exhibition, has sprung from the brain of an able designer, M. Protat, whose name does not even appear in the catalogue. The London Exhibition, and the study of the French and English factories, point out in a very significant manner the difference in the industrial genius of the two nations. We have just described the difference in the construction, in the site, and in the objects surrounding the factories; but it is still more striking, when you enter the workshops, to study the distinctive character of the two races. The English factory operative is cold, silent, absorbed by his task; he possesses a peculiar characteristic of patient and severe firmness, which distinguishes him from other workmen even in his own country. The French workman, on the other hand, more lively, more sprightly, more open, likes to chat, and indulges in it willingly whenever the din of machinery does not drown his voice. The English workman lives more isolated, he is more fond of privacy; he prefers domestic life when he has a family. The Frenchman is more fond of living in public, of noise, and of political discussions. The English workman does not seek after the public journals with the same eagerness as the French artisan. The influences by which both races are surrounded must also be accounted for in their characters. The French, accustomed from early life to the study of arts, of design, and the sight of monuments of art; the English more accustomed to the management of machinery and its various applications. Whatever degree of superiority the severe habits of the English may impart to their manufactures, the Alsatian, more than any other branch of French industry, tends to deprive them of it, because it unites with the advantages of internal economical order, the merits of numerous arts which add value without enhancing the price of the products. It is not the richness of the material which constitutes the price of printed calicoes—it is the taste, the originality of the design, the happy combination of colours; all superiorities of French genius, which compensate, by a species of natural favour, for the elements of inferiority which we may possess.

The same contrast is found in a very different branch of industry now in process of undergoing a complete revolution, and split into two very different camps. I allude to

artistical and industrial gold and silversmith's work. Garrard in London, and M. Odiot in Paris, represented industrial; M. Rudolfi, M. Morel, M. Froment-Meurice, the artistic branch. Which of these is in the right? which in the wrong? Which of them works in the well-understood interests of production? How are we to establish an equitable comparison between such opposite styles? The gold and silversmith's craft has attained in these days such a degree of importance, that the question will not be easy to decide in the midst of the universal jury. Thus the English are still inspired by the ample forms of the age of Louis XIV., whilst in France they have long since studied to imitate the Grecian and the Roman. The English prefer the useful and the comfortable to be affected, to the bastard imitations of a revival, the originality of which too often consists in changing white into black, and to give to silver the colour of iron. We have seen too many masses of articles of this kind, at the London Exhibition; fantastical groups of doubtful utility, and better calculated to figure in a cabinet of curiosities than on a well-served table. What signify these silver palm trees, these gentlemen on horseback, these allegorical and hieroglyphical figures, and all these whimsical compositions with which English workers in precious metals have inundated the Exhibition? Nothing but a dangerous departure from the path of taste, capable of driving the entire branch of industry into a false path, and drying up the source of its markets. I prefer the manly and proud simplicity of Odiot. Odiot, the gold and silversmith, has produced gold and silversmiths' work. All his productions are destined for the use and service of the table. His candelabra, elegant as they are, are made to carry candles; his soup-tureens to contain soup, his coffee-pots to pour out coffee. You have only to place a bottle of champagne, surrounded by ice, in his wine-coolers, made of pure and simple silver—not forced, not contorted, not oxidised at considerable expense. Thus the famous Germain covered with his magnificent works the tables and the dressing-tables of Louis XIV. at Versailles. By the side of these principal pieces, where the perfection of the work vies with the richness of the material, the branch of industry of electro-silvering and gilding, of which the head-quarters at Paris are at Messrs. Christoffle and Co.'s has made its appearance at the Universal Exhibition, and has attracted a great number of visitors. It arrived late, but it has regained lost time by a skilful display, and brilliant and varied, which will ever stand in the same relation to gold and silversmiths' work, as cotton lace does to thread lace, but without damaging the former, or destroying the taste for it. Elkington's process is still in its infancy. The immense metallic movement of California and Russia is destined to give it a new impulse, and I am convinced that ere long the keys of our furniture, a considerable portion of our table cutlery, our hunting weapons, and the locks of our apartments, will be gilt by this process.

France and England have exhibited gold and silversmiths' work of an immense amount. Several makers have contributed to the value of £40,000, some for £20,000, others for £10,000. I know not who will buy these Napoleons, these Wellingtons on horseback, these towers of Babel, these infidel slayers, these tigers, these wolves and lions, of gold and silver, which are of no use. It appears to me that bronze is better adapted than the precious metals for purely artistical groups. Bronze is firmer and more severe, and it has become so flexible in the hands of Parisian workmen, that its chasing is even superior to that of gold and silver. It is in the industry of bronzes that the alliance of taste, of form, and imagination, has been most admired. This branch of industry is growing every day, and its importance will gain much from the comparison with the bronzes from the remainder of Europe, such as they have appeared at the Exhibition.

CHAPTER X.

EUROPEAN WORKMEN JUDGED BY THEIR WORKS IN THE GREAT EXHIBITION—NATIONAL CHARACTER DISPLAYED—A CONGRESS OF WORKMEN SUGGESTED—THE ENGLISH WORKMAN—THE FRENCH WORKMAN—THE GERMAN WORKMAN—THE SPANISH WORKMAN—INDIAN HANDICRAFTS.

As in our preceding chapter several references are made to the WORKMEN whose various labours adorned the numerous departments of the Great Exhibition, we shall sum up the notices of our Parisian Mentor with the following article from his talented pen, on the comparative merits, peculiarities, condition, and mode of thinking and living of the different workmen of Europe. Amidst the marvels of the Universal Exhibition, says our author, the idea has frequently suggested itself to me, to cast a glance at the condition and the habits of the workpeople who, in reality, have done the honours of it, and to endeavour to seek out if some mysterious relations did not exist between them and their works. In what consist these relations? Why has each country a distinctive characteristic of national originality, to such a degree that furniture, arms, lace, and woven fabrics, but seldom resemble each other in Paris, in London, in Vienna, and in Madrid? Why are Spanish workmen so gay, so lively, and so sober, and those of England so profoundly serious, silent, and voracious? Has not French petulancy some connexion with the boldness of good taste of the French artisan, and Germanic coldness with the conscientious but heavy work of the German one? By means of what inexplicable prodigy do the workmen of India manufacture shawls more beautiful than those of Paris, and what is the unknown source of that school of designers which in the East seems every day to outstrip the limits of fancy?

I have greatly regretted that advantage has not been taken of the Exhibition to unite in a congress, in the midst of their works, workmen of all nations. They might have interchanged amongst each other, to their mutual instruction, a host of practical ideas and ingenious processes, which would have become the inheritance of the general industry of the world. In default of this cosmopolitan gathering, it will not be without interest to sketch the peculiar characteristics of the principal labouring families, whose productions have been displayed at the Exhibition, and to bestow a rapid and impartial glance upon their present condition. These large masses of men have, since the commencement of the present century, acquired an importance, and in some parts of Europe an influence so considerable, that it becomes imperatively necessary to study, in the closest manner, everything connected with their economic and social condition. The abolished system of guilds maintains still greater sway than is generally imagined amongst the emancipated branches of industry. Traditions have survived laws, and the labouring classes continue to live isolated, in a world apart, too often a sealed book to those most interested in being acquainted with it. This characteristic line of demarcation is nowhere more profoundly traced than in England. The English workman is a being apart, having his manners, his habits, his vices, his virtues, his pride, his modes of working, and his amusements peculiar to himself. His mirth and his gloom resemble no other. The miners, the spinners, the weavers, the builders, the stokers, all the workmen engaged in manufacture, have almost nothing in common with those employed in agriculture. The workmen engaged in manufacture all eventually identify themselves with the regularity of their machines, under the influence, I had almost said the despotism, of the division of labour. They are compelled to go and to come, forward and backward, like the machines *which employ them:* the machine commands and they obey. Their

task is regulated with mathematical precision, and their arms make as many movements as the break-wheels make revolutions. After some time the result is a species of automatic life, a frightful monotony, from which the workman only escapes in his leisure moments by strong and gross excitements, by intemperance, which leads to drunkenness, and this drunkenness itself is of a gloomy and savage nature, like the drinks which have produced it. The manufacturing system has likewise profoundly modified the character of the English workman. He lives less in the midst of his family, and belongs much more to his fellow-workmen than to his children. His existence has ceased to be domestic. From the commencement he is enrolled in one of the thousands of societies which abound throughout the country, and which, if need be, easily assume the attitude of coalition. The workman's forum is the meeting-place of his trade's union; it is the club of which he forms part, the economic or industrial association to which he is affiliated. These associations are reckoned in England by thousands; they form veritable tribes, which have their regulations, their prejudices, their exigencies—nay, even their superstitions. The spinners and the printers of Manchester, the hosiers of Nottingham, the cutlers of Sheffield, the smiths of Wolverhampton, the potters of Burslem, the colliers of Newcastle, the ribbon weavers of Coventry, the cloth weavers of Leeds, form as many industrial armies, obeying the voice of their chiefs, each ranged under his own banner, and in reality distinguished by a kind of peculiar physiognomy easily recognisable.

The wives and children of these workmen generally follow the vocation of their husbands and fathers. They thus get inured to them at an early age, at least in those branches of industry which admit of the employment of women and children, and they at last acquire faults, and physical and moral qualities, which are really characteristic. Their costume never varies: a spinner, a mender, a collier, a smith, are always dressed nearly in the same manner; and even their hair, particularly amongst the women, is arranged according to their vocation with invariable regularity. Their minds, incessantly bent upon the same object, eventually acquire a gift of second sight, which often, without instruction, leads them to discover improvements of important details. It is seldom, however, that their thoughts travel beyond the regions of the factory and of material enjoyments; and it is a distinctive trait in their character, that none of them dream of making their fortunes as politicians, neither does ambition penetrate their souls. They like labour for its own sake, and it is a great point of self-love with them to devote themselves to it conscientiously and perseveringly. There is a good deal of affinity between them and their machines. They have little initiative, of taste and ideas, and they are infinitely less artistical than ours. The French workman is nearly in every respect the opposite of the English one. His dependence, proud and haughty, always resembles a concession, and he deems himself attached to a temporary yoke rather than to a permanent workshop. His exactness and stability nowise partake of the English fatality and resignation; he would ever be ready to go, and to give notice rather than receive it. He is more gay, more lively, more talkative, more of a reasoner; and, since the contagion of politics has entered our manufactories, he has become imperious, cavilling, *important*, and rather occupies himself with the government of the state than that of his looms. Among many, business is looked upon as an affair of circumstance and of necessity; they occupy themselves with it because it is necessary to live, and hitherto politics have not yet discovered the secret of supplying masses of men with a livelihood without labour; but their minds are, in reality, elsewhere, and in quest of perpetual and undefinable ameliorations. The real French workman is the workman of art, and it must be said, whatever may be their faults, such are the Parisian workmen. There are excellent workmen throughout France; there are only perfect ones in Paris. Our weavers of cloth, and our spinners of cotton, resemble, in many respects the English

workmen of their categories; but the Lyonnese workman, the designer of Mulhouse, the operative manufacturer of shawls, and he who makes the ribbons of St. Etienne, have always required to receive from Paris *the secret influence*, either by means of the design, or by the idea or the *order explained*, to reach perfection. Paris is like a large school of taste, which gives the tone and the colour. It is there, in fact, that are formed, in innumerable schools of design, mostly gratuitous, these legions of ingrates, who have acquired their talent in establishments maintained by governments which, every ten or fifteen years, they take so much pleasure in upsetting.

If you examine well, you will find, in the provinces, a host of remarkable special manufactures. Doubtless, excellent guns are made at Châtellerault, and at St. Etienne; but it is in Paris alone that beautiful arms are made. Watchmaking is carried on very economically and very ingeniously in Franche-Comté, but it is in Paris that the finishing stroke is put to these watches, and it is there only (I am only speaking of France) that they are worthy of their name. Good locks are unquestionably manufactured in Picardy, and which are not dear, but the great lock-makers, the masters of the art, are all in Paris. It is thence that all inspirations emanate. The Chamber of Commerce of that city is now engaged in printing a book, which will be exceedingly curious, and which will clearly explain this economic phenomenon: it is a faithful statement of all the professions exercised in that great city, street by street, and, to some degree, man by man; an analysed register of that ingenious, intrepid, and capricious ant-hill, called the workpeople of Paris. There will appear, for the first time complete, the nomenclature of these ancient branches of industry whose products, known under the name of Parisian articles, are spread over the entire world, and which know no rivals. Nowhere is such furniture made; nowhere are toys, bronzes, paper-hangings, tapestry, articles of fashion, umbrellas, ornaments, and those thousands of trifles which represent millions in value, produced better than in Paris. This vast industrial encyclopædia comprises entire streets of the capital, the streets Saint Denis and Saint Martin, the street of the Faubourg St. Antoine, the street Grenetat, the street Bourg l'Abbé, the two streets of the Temple, where more than one unknown genius produces masterpieces at wretched prices, and frequently imparts value to nameless materials, to lucifer-matches, for instance, which absorb, it will hardly be believed, whole timber-yards. But the greater part of these branches of industry are entirely domestic; they are carried out, like the work of the milliners and lacemakers, in circumscribed workshops, in which the most skilful mechanical resources frequently secure the independence of the workman, who is paid by the piece, and who manufactures articles for which he has received or furnished the raw material according to the extent of his small capital. It is this mode of labour, common to the Parisian, and the Lyonnese workman, which imparts to both a peculiar physiognomy amongst all the races of French and foreign workmen. London does not produce the immense variety of articles that are made at Paris. Mechanism governs everything, and individual labour does not strive to seize on that part of its domain in which all the marvels of our capital are produced, under the inspiration of the taste which distinguishes its artists. Sèvres, the Gobelins, the Savonnerie, are the types of that brilliant school of decoration whose lustre has shone over the entire of French industry, to the eternal honour of those who have laid or strengthened their foundations.

The more I study the question of workmen employed in manufactures, the more I remain convinced that the true vocation of ours is to excel in those branches of industry which can do without protection, and live an independent life by inspiring themselves with the sacred fire of art. The English so thoroughly understand the French superiority in this respect, that for some time they have made unheard-of efforts to naturalize, amongst the good workmen, the study of drawing and the cultivation of the beautiful, so

necessary to the useful. Wanting their own, they borrow our workmen, thus implicitly admitting that neither the progress of machinery, nor the low price of freights, nor the abundance of capital, can compensate for the absence of taste, which is also a creator of value. Open the lists of the jury awards, and you will see how powerfully this peculiar French element of wealth has weighed in the balance, which has only charmed the judges, after having excited the admiration of the entire world. The works of the Lyonnese will probably remain the most brilliant souvenir of this memorable struggle. A third family of workmen has appeared with *éclat* on the great stage of the Universal Exhibition; these are the workmen of the German region, in which are comprised all those of Prussia, of Austria, and those of the other German states. They are less known, and have hitherto made less noise than the French and the English, because they are less agglomerated, less compact. German manufacture, with the exception of that of some towns or valleys renowned for their industrial establishments, is, as it were, lost and drowned in the wave of rural populations, which are the predominating element of that portion of Europe. But the German workmen have just proved of what they are capable, and the world has beheld with admiration a host of products created by them, worthy to compete with those of the most advanced nations. The imperial printing-office of Vienna has obtained the council medal, whilst the national printing office of Paris has only obtained the prize one. The Prussian founders have covered themselves with immortal glory. The valley of Chemnitz, in Saxony, has exhibited a host of articles capable of competing in point of cheapness and good workmanship with France and England themselves. The Austrian cabinet-makers have appeared to me likely to become more redoubtable rivals to those of the Faubourg St. Antoine than those of any other country in the world. Hitherto, however, these skilful men have only been imitators in everything. The German workman invents little, but he copies marvellously well—not servilely, but by imparting to his works a peculiar stamp of *naïveté*. They are less mechanical than the English, and less artistical than the French; but they rather incline to the French style, wanting, however, their elegance, which they sometimes happily replace by the natural and the simple, when they do not degenerate into mannerism. Their habits are, generally, tolerably temperate. The English eat; the Germans smoke intemperately, by day, by night, I had almost said at meal times, in bed—it is frightful: and if this habit should persist in developing itself, Germany will become uninhabitable. One of my greatest apprehensions is to see this ruinous taste penetrate into our workshops, where it injures and stupifies the children, and causes amongst them more serious ravages than is generally believed. The German workman lives much more in the midst of his family than the other workmen of Europe; and although the absurd spirit of communism is at this moment infecting the German world beyond all conception, the old fundamental qualities which distinguish it will struggle a long time against the tendencies of the evil genius which has been introduced, it must be admitted, into Germany, by the students of the universities. The German workman is patient and thoughtful; he has much more sensibility than the English workman, much less elegance than the French one. He likes to infuse sentiment into his works; and I might mention works in Bohemian glass, toys of Nuremberg, porcelain of Saxony, even printed calicoes, and clocks, which bear strong evidences of this tendency, which might be called pastoral, if it did not frequently degenerate into the trivial and the vulgar. On the whole, they are a race of men now very much advanced. They have gradually profited by the discoveries and processes of France and England, and after having, for a long time, made common woollen cloths in Silesia, they now manufacture very fine ones at Aix-la-Chapelle. The abolition of barriers between German states, consequent upon the establishment of the Zollverein, has contributed, in no trifling degree, to give to German

industry an impulse, which has not ceased to grow under the influence of the habits of order and economy of its manufacturing population, and by the aid of the numerous hydraulic movers, spread over the whole surface of the country. Germany will not arrest its progress in so noble a path, and, notwithstanding the efforts which have been made to allure it to the beaten track of protection, it will complete its interior enfranchisement by the speedy conquest of freedom of commerce.

The Spanish workmen do not deserve the fourth rank in the great working family of Europe; judging only from the actual importance of the products which they have sent to the Exhibition, the Belgian and the Swiss would have the right to take precedence. But Belgium and Switzerland gravitate in the orbits of France and Germany, and their workmen, nearly equally distributed between agriculture and manufactures, are not so original as those of Spain. Spanish workmen are, more than is generally imagined, choice men, remarkable for vigour as well as suppleness, and nearly all of proverbial sobriety. I have been surprised, on going through the manufactories of Catalonia, at the frugality of their habits, their liveliness, and their admirable aptitude for labour. Their intelligence and activity are well calculated to surprise those who judge of Spain from the reputation of indolence and effeminacy enjoyed by its inhabitants. The Galicians, the Basques, and the Asturians, are first-rate workmen; those of Andalusia not less so, and I have found in the province of Valencia, unjustly renowned for its idleness, work men endowed with as great an energy and ingenuity as those engaged in our silk manufactures of Lyons and Avignon. The contagion of socialism has not yet penetrated amongst these vigorous and poetic populations. They are, doubtless, much behindhand as regards education, and do not possess all the resources of machinery of the English workmen; neither are they endowed with the indefatigable and serious perseverance which characterises them, but they are eminently fitted for industrial pursuits, and the sacred light of ancient art which has shone in Spain is on the point of being rekindled amongst them. The two last expositions of Madrid, although very incomplete, have raised the most legitimate hopes in this respect. The Spanish workman is in the path of progress, since the fall of the régime which favoured idleness and recklessness in his country; as soon as the greater portion of the convents were transformed into factories, other manners began to prevail, and I am acquainted with robust monks who have become excellent spinners. Spanish industry cannot fail to revive in conditions compatible with the country, thanks to the peculiar facilities which the workman is assured of finding in the mildness of the climate, the abundance of raw materials, and, above all, the richness of its mineral products. It will be long before Spain will have to dread the invasion of the doctrines which have perverted the moral sense of the other working populations of Europe. "The workman of that country," according to the expression of M. Ramond de la Sagra, "knows not yet to curse the hand that pays him; he accepts labour as a duty, never as a yoke; he obeys from conviction and from habit, and he preserves his pride and his integrity in the humblest station." Would I could say the same of the Italians; but there is no longer an Italy. Italy no longer belongs to herself, and does not know herself; and but for the vigour of Piedmont, which her recent misfortunes have not been able to cast down, and which carries in her bosom the destinies of the Peninsula, we should have to look to the past rather than glimpse at the future, for the glory and prosperity of the Italian workman. Who will some day reveal to us the mysteries of the Indian working world!—who will cause the light to penetrate into those workshops of the East, where the hand of man is incessantly occupied for a pitiful and precarious remuneration, inferior to the wages, already so wretchedly low, of our manufacturing operative? Thus, at both extremities of the scale, the spindle and the weaving loom produce the same economical results

for the lot of the labourer. In France and in England, in Germany and in Spain, in Switzerland and in Belgium, there are entire generations who scarcely earn sufficient to live under the rule which protects them. Is not this protection an illusion? Is it not the workman who suffers from the ulterior competition, and the master who profits by the external restriction? The same cause which exhausts the one does it not enrich the other? and might it not be asked—Which is the dupe? Reply—Every body is duped: how long will it last? As a contrast, in every respect, to the energetic and laborious habits of the European workman, we shall conclude our chapter with the subjoined account of

INDIAN HANDICRAFTS.

An English engineer in India describes his experiences amongst the native workmen in an amusing article in *Chambers' Journal*, from which the following is condensed.

I had the anvils raised upon wooden blocks, so as to necessitate an erect posture while at work. The poor fellows submitted with the best grace they could, but seemed greatly embarrassed. The queer shaky way in which they stood, and the undecided flexure of the knee and hipjoints, were so indicative of a tendency to flap down on the slightest possible pretence, that it was really impossible to look at them without laughing. The work went on very slowly; but I hoped that all would soon go well: alas! I had under-estimated the tenacity of a race-established precedent; and, so, one afternoon, I found my blacksmiths perched on blocks of wood of the same height as their anvils, and hammering away with all the vigour which the stability of their tottering pedestals admitted of! It was hopeless contending with such a demonstration as this; so, to the great joy of the *lohairs* (blacksmiths), I allowed the anvils to be placed once more on terra firma. Time, which the Englishman values as money, has a very secondary place in the estimation of the Oriental. The *radj*, or bricklayer, is, I think, about the best illustration of this. He works with a trowel about the size of an ordinary tablespoon, and a small hammer weighing about six ounces. Armed with these, and squatting before his work, he, in a loud voice, summons his *rundees* (women, two of whom always wait upon each radj), and orders them to bring *eentee* and *massala* (bricks and mortar). The rundees in due season make their appearance—one with a brick in each hand, and the other with a small wooden trencher, about the size of a bread basket, filled with the massala. I am much within the mark when I say, that a single English bricklayer and hodman could in one day do the work of a dozen radjs, rundees, and all; and do it much better too. One would imagine from this that building was a very expensive process in India; but the contrary is the case. An English bricklayer and hodman will cost from eight to ten-shillings a day, while the Indian radj and his two attendant rundees will not cost more than from threepence to fourpence per day. The writer next attempts to introduce the barrow for earthwork in place of the little cowrie baskets, holding about a spadeful each. After a great deal of see-sawing, one poor fellow managed to deliver his freight. Thinking that a little practice, unembarrassed by my presence, would familiarise them with the barrow, I left them for a time, and on my return I beheld the wheel-barrow borne along by four men, very much in the style in which dead men are carried off the stage—that is, two at the head and two at the feet—palanquin style, in short. A set of lighter ones, little larger than those with which boys are accustomed to amuse themselves in England, was made, and success for a time was complete; but one day, happening to come upon them unexpectedly, there were half-a-dozen of the men walking along with the greatest possible gravity, each carrying his wheelbarrow on his head—legs in front, and wheels behind! Even after I had threatened to dismiss the first man I found carrying his wheelbarrow on his head, I met a serious-looking

old man tottering along with his barrow laid across his arms like a baby in long clothes! The first snort of the iron horse seems to have produced a complete panic, and the movement of a steam-engine was hailed like a new Avatar. I was at much pains, he says, in endeavouring to explain the principles of its action to the most intelligent of the workmen; but I found they had long ago provided themselves with what, to their thinking, was a complete theory of the whole matter. The doctrine was, that the boiler contained an English *bhoot* (spirit); that we made a fire beneath the boiler, and roasted the said bhoot until he called out *duhagei* (mercy) through the safety-valve; and then only, and not before, would he go to work: the water was merely given to quench his thirst! The time is not far distant when the rich produce of Central India will be poured into Europe with a profusion and regularity never yet dreamed of. The steam-engine is destined to do more for India than all her other teachers have yet effected. This iron apostle of civilization does not declaim; it does not dispute nor vituperate; but it works, and always succeeds.

CHAPTER XI.

MANUFACTURES FROM CAOUTCHOUC.

(*From the Jury Reports.*)

ACCOUNT OF PRODUCTION OF CAOUTCHOUC—HOW PREPARED AND PURIFIED—FIRM OF MACKINTOSH AND CO.—MR. GOODYEAR—VULCANIZATION OF INDIA RUBBER—ITS CONTINUALLY INCREASING USEFULNESS—MANUFACTURES FROM GUTTA PERCHA—MODE OF OBTAINING GUTTA PERCHA—REMARKS ON ITS VARIOUS USES.

The existence of a milky juice in many plants, which flows from them when their tissues are wounded, is a fact that has been familiarly known from time immemorial. It is, however, only a matter of recent discovery that this milky juice characterises several families of plants. Although the great majority of plants which yield this juice in abundance are tropical, yet they are not without their European representatives. The spurges, dandelion, and celandine of our road-sides, are instances. The families of plants which furnish this milky juice in the greatest abundance are Moraceæ, Euphorbiaceæ, Artocarpeæ, Apocynaceæ, Cichoraceæ, Papaveraceæ, Campanulaceæ, and Lobeliaceæ. This juice, which is called by botanists "the milky juice," because it has an appearance similar to milk, has also the physical constitution of that fluid. It is an aqueous liquid, charged with soluble matter, in which float globules of a substance insoluble in water, and which are by their tenuity held in suspension in the liquid, but for which they have no affinity, in the same manner as butter is held in suspension by milk. From the difference of the refractive powers of these two substances, each of which, taken separately, would be colourless or transparent, arise the opacity and white colour of the two; hence the compound is properly called a "milky juice." The analogies which this juice exhibits with the milk of animals and vegetable emulsions are seen in the manner in which it acts when left to itself. Run out into the air, received and preserved in close vessels, it separates itself into two layers, as milk itself would do. The watery part very soon has an insoluble part floating upon it, which collects together, and swims at the top as cream swims upon milk, and which forms nearly half of the entire mass. But with these physical resemblances the analogies cease. That which in milk and in

emulsions produced from seeds collects on the surface of the aqueous liquor, is, properly speaking, a fatty body containing oxygen in its composition, as they all do; while the kind of cream which swims upon the milky juice of the plants when left to itself, is one of the compounds of carbon and hydrogen which are found so frequently in organic bodies. The latter, when obtained for commercial purposes, bears the Indian name of *caoutchouc*.

This substance has long been known to the natives of both the Old and New World, in Hindostan and South America. It was not, however, till the expedition of the French Academicians to South America in 1735, that its properties and nature were made known in Europe by a memoir upon it by M. de la Condamine. This notice excited little attention; and subsequently notices of this substance were sent to the French Academy, in 1751, by M. Fresnau, and in 1768 by M. Macquer. At the latter end of the last century and the begining of the present it was brought into this country in small quantities, where, on account of its being used for rubbing out black-lead pencil marks, it acquired the name of India-rubber. Although, after its application to the waterproofing of garments, its consumption gradually increased, the importation into the United Kingdom in 1830 appears not to have been more than 50,000 pounds. In 1842, the import of this article had increased to between 700,000 and 800,000 pounds. Up to the present time the consumption of India-rubber has prodigiously increased; and one part alone in South America is said now to send to Great Britain nearly 4,000 cwts. annually. To the large consumption in the United Kingdom we must add that of America, where the application of caoutchouc has been much more general and successful than even in our own country.

The particular species of plants which are employed for procuring India-rubber are very numerous, and it is probable that many yield it which are not yet known to botanists. The tree which supplies most in continental India is the *Ficus elastica*, a tree belonging to the order Moraceæ; it is exceedingly abundant in Assam. All the species of ficus yield caoutchouc to a greater or less extent in their juices, and even the common fig (*Ficus carica*) of Europe contains it. Species of ficus produce the caoutchouc brought from Java, and *F. radula*, *F. elliptica*, and *F. prinoides* are amongst those mentioned as affording a portion of that brought from America. Next to the Moraceæ the order Euphorbiaceæ yields the largest quantity of caoutchouc. The *Siphonia elastica*, a plant found in Guiana, Brazil, and extending over a large district of Central America, yields the best kinds of India-rubber that are brought into the markets of Europe and America. To another order, Apocynaceæ, we are indebted for the caoutchouc which is brought from the islands of the Indian Archipelago. The plant which is the source of this substance in those districts is the *Urceola elastica*, a climbing plant of very rapid growth and gigantic dimensions. A single tree is said to yield, by tapping, from fifty to sixty pounds annually. Many other plants of this order yield caoutchouc, and of those given on good authority we may mention *Collophora utilis* and *Cameraria latifolia*, plants of South America; *Vahea gummifera*, in Madagascar; and *Willughbeia edulis* in the East Indies. To this order belongs the cow tree, or Hya-hya (*Tabernæmonta utilis*), of tropical America, which yields a milky juice that is drunk by the natives of the district in which it grows. The caoutchouc, whilst it is in the tissues of the plant, is evidently in a fluid condition, but after its separation from the other fluid parts, its consistence becomes changed, and it forms a solid mass similar, in its external characters, to vegetable albumen. In this state it is dense and hard, but may be separated and rolled out so as to form a sheet resembling leather. It has many interesting and peculiar properties. Insoluble in water and in alcohol, it dissolves in ether, in the sulphuret of carbon, the fat oils, and the liquid carburets of hydrogen. It is soft and elastic at the ordinary temperature, but at the temperature of two degrees above the freezing point, it acquires

the hardness of wood. A temperature of 100 degrees softens it without altering its form. It then unites with itself with the greatest facility, and two pieces recently cut apart reunite so as to render it impossible to discover where the junction has taken place. But a higher temperature, approaching 150 degrees, changes it into an adhesive substance, which, on cooling, does not recover the primitive properties of caoutchouc. In this state of recent coagulation, and while still in a pulpy condition, caoutchouc possesses a degree of plasticity which admits of its receiving, by means of moulds, the most varied forms.

The greater part of the caoutchouc of commerce is obtained by the natives of the countries in which it is produced, in the form of shapeless masses, collected at the foot of the tree which has been incised or cut, for the purpose of extracting the juice from it, or solidified in a trench made in the earth, and coagulated in this rude mould in voluminous masses, which often resemble the trunk of a large tree. A part of it, however, possesses other forms, which the rude art of the natives attempts to communicate to it. They model, with plastic clay, figures of animals, imitations of the human foot, and pear-shaped bodies, and then dipping these moulds in the thickened caoutchouc, and renewing the connexion when the first coat is solidified by exposure to the air, they obtain, by breaking the mould and getting it out in fragments through an opening properly arranged, hollow flasks, figures of animals, rough slippers, &c. They thus make caoutchouc serve for the manufacture of objects for which we ourselves employ animal membranes and leather. Caoutchouc is obtained from both the Old and New World. The East Indies furnish caoutchouc, of which numerous specimens have been exhibited in the Crystal Palace by the East India Company. This caoutchouc, which comes principally from Java, is often glutinous, and is less esteemed in commerce than that furnished by the equatorial regions of America. Great quantities of caoutchouc are imported into Europe from Mexico, from South America, and especially from the province of Para, in Brazil. That which comes in the shape of bottles is generally preferred, and when it is pure, and the different coats which comprise it are well united, it may be employed immediately for many purposes. But it often happens that the coats which form the pear-shaped masses are badly united. It then becomes necessary, in order to make use of them, to work it up by a process of kneading, so as to obtain it in a coherent or homogeneous mass. This operation becomes especially indispensable when, as most commonly happens, the caoutchouc is in large impure masses, and mixed with sand and the debris of vegetable matter. These impurities do not entirely proceed from the moulds made in the earth, into which the juice has been allowed to exude, and in which it has been left to thicken and solidify, for their quantity and their presence between the coats of the pyriform masses show that the impurity is mainly to be attributed to fraud. The caoutchouc thus obtained is not applicable to any use until it has undergone a previous purification. The purification of the caoutchouc is accomplished by submitting the impure caoutchouc to the action of cylinders furnished with teeth turning in opposite directions and with unequal velocities, which cause it to undergo a kind of mastication. If the matter which renders the caoutchouc impure adheres very closely when dry, this property is lost when it is moistened. From this it happens that, by causing a small jet of water to flow into the apparatus, these foreign matters, crushed by the mill, are carried off by degrees, and the purified portions of caoutchouc unite the one with the other. By the subsequent exposure of these masses of purified caoutchouc to a second mastication, but performed dry, they are softened by the heat evolved during the forcible compression to which they are then submitted. In this treatment the caoutchouc becomes softened without being liquefied, and a homogeneous mass is formed which is cut in the form of rectangular blocks. These are again placed in casting moulds, in which they are powerfully compressed, until they are completely

cooled, when it is found that the pressure has freed them from cavities, air-bubbles, &c. By submitting them to the action of knives moved very rapidly by a mechanical action, and the edges of which are constantly kept wet by a thin jet of water, the caoutchouc is cut into sheets of various thicknesses, which, subdivided in their turn, constitute those small parallelopipedons used by draughtsmen to rub out the marks of black-lead pencils.

This use of caoutchouc was, in England, for a long time the only one to which it was applied; but this limited use was far from indicating the extent to which caoutchouc has been employed in the last thirty years, or the multiplicity of services it has been called upon to perform for sanitary and industrial purposes. To rub out pencil marks, to form the rude slippers which seemed well adapted to the Indian toilet, but to which a form acceptable in Europe had not been imparted, were, in fact, the only uses to which caoutchouc was applied up to 1820. In England was discovered the art of stretching it into thin sheets, and thus making it available for the production of waterproof fabrics. In France was discovered the art of drawing it out into delicate threads for the manufacture of elastic tissues. We are indebted to Messrs. Mackintosh and Hancock for the application of caoutchouc to the rendering tissues waterproof, and for the manufacture of those garments which throughout the world have rendered unquestioned service to the cause of health, and made the name of one of their inventors so justly popular. The garments called Mackintoshes are well known. They are formed of fabrics covered on one side with caoutchouc, or two fabrics are united by the caoutchouc between. They are thus rendered impermeable to water, but at the same time they possess a flexibility such as it had never been possible to obtain by the employment of other varnishes. For the purpose of obtaining the sheet of caoutchouc sufficiently thin for this purpose, it is dissolved. The solid carburets of hydrogen are soluble in the liquid carburets, and for this purpose spirits of turpentine and the volatile products of coal tar were first employed. But after having obtained this solution, it was necessary to evaporate a great quantity of it for the purpose of obtaining a coating of caoutchouc, which at first occupying a great space, should be reduced to a small one when the drying was complete. For the purpose, however, of economising the solvent, a method is employed of kneading the caoutchouc, by means of powerful machines, with the spirit of turpentine or naphtha, and impregnating it with the menstrua without dissolving it, and softening it without making it a liquid; the caoutchouc rendered pulpy, is then spread upon the cloths by means of a flattening mill, and the process of evaporation is thus dispensed with. Waterproof garments were thus rendered cheap and available for the use of every class. This description of garment, nevertheless, presented a notable fault which was not avoided until a later period, and which arose out of the properties inherent in the caoutchouc itself. This substance, which in ordinary circumstances, possesses very great elasticity, such as to justify the name by which it is designated in France, *gomme élastique* (elastic gum), loses this elasticity when exposed to a temperature near the freezing point of water, and this suppleness, which might almost cause a sheet of caoutchouc to be mistaken for an animal membrane, gives place all at once to the rigidity exhibited by the same membrane when dried. This property, which in cold weather was a real defect, when applied to fabrics rendered waterproof by caoutchouc, has been found very useful in the making of garters, braces, and other articles in which the elasticity of the caoutchouc has been brought to supersede that which had, until then, been obtained by the employment of spiral metallic springs. In order to obtain the threads which are used for the manufacture of elastic tissues, either the flasks of caoutchouc in its natural state, cut in half and flattened by pressure, or else those masses of purified caoutchouc which are sold in continuous sheets, cut by knives, wetted by small jets of water, are employed. These sheets are divided into thongs: the latter are afterwards subdivided into very narrow

bands, which serve in their turn to produce the threads employed for the manufacture of the tissues. If by a slight elevation of temperature the natural elasticity of the caoutchouc is increased, these narrow bands can then be stretched into threads of great length by drawing them out and rolling them upon bobbins. But it may be well conceived that the management and weaving of the threads would be very difficult if they retained their elasticity. Fortunately the particles of the caoutchouc eventually accommodate themselves to the forced position which they have been made to assume, and the exposure to a low temperature materially hastens this result. The threads having thus lost their elasticity can then be introduced like common threads into the fabrication of stuffs; they can be covered with a different thread, by winding spirally round them cotton, silk, &c., and this compound thread may be in its turn introduced into the composition of new tissues. In all these operations the caoutchouc has retained all its rigidity, but that elasticity of which it has been deprived by a long distension and a low temperature, can be restored to it by means of a proper degree of heat. The stuff thus woven is exposed to a temperature of from 140 degrees to 160 degrees Fahrenheit, by the passage of a hot iron, when each thread resumes with its primitive length the diameter which it first possessed. The fabric diminishes in length without increasing in width. The tissue is thus compressed, and the caoutchouc, which has regained its elasticity, communicates it in a permanent manner to these tissues. The manufacture of these threads of caoutchouc constitutes at present a distinct branch of industry from that which, making use of them either in an uncovered state, or covered with silk and cotton, combines them with ordinary threads in the way of weaving; and, like the manufacturers of linen or cotton fabrics, the makers of the elastic tissues buy the threads of caoutchouc in bobbins of different numbers. When the limited lengths of the narrow bands from which these threads are manufactured is borne in mind, the necessity is foreseen of being able to unite them end to end for the purpose of making continuous threads. A remarkable property of caoutchouc renders this easy. It unites with itself with the greatest readiness if it be the least warm; and two surfaces recently cut with a very sharp instrument, may be made to adhere together by means of pressure, with a cohesion equal to that which unites the other parts of the same thread. But although in this case this property is made useful, in other instances the limited elasticity, and the rigidity communicated to it by a low temperature, are great drawbacks. However, all these properties inimical to its use disappear in that combination of sulphur with caoutchouc called vulcanized India-rubber, which exhibits such special properties as to form in some degree a new substance. This transformation of caoutchouc was first applied to practical purposes in America.

While in England the employment of caoutchouc was being developed principally in regard to the rendering of cloths waterproof, and in France its elasticity was being made available for the manufacture of certain tissues, it was turned to account in America for waterproof shoes, by making use of the processes discovered by Mr. Charles Goodyear, who, since 1836, had been engaged in the discovery of means for making use of caoutchouc, with a skill and perseverance which have borne the most happy fruits. It is not that attempts at fashioning according to the European taste, and thus rendering useful the Indian shoe made of caoutchouc, had not been frequently made in Europe, but these attempts had hardly been successful in giving them acceptable forms, and the stiffening by cold rendered them very inconvenient. However, Mr. Goodyear at last succeeded in making shoes of raw India-rubber purified, and perfectly free from objection, thus completing by the manufacture of waterproof shoes the service which Mackintosh had begun by the invention of the garments which bear his name. Since 1842, Mr. Goodyear has imported into Europe shoes which possess an unlimited and permanent

elasticity, and which resist cold; two of their surfaces may be pressed against each other without the least adhesion taking place. These are precisely the remarkable qualities which characterise that caoutchouc which is called in the present day vulcanised India-rubber. Impressed, perhaps, with the idea, too often moreover a just one, that the specification of a patent is sometimes nothing more than the occasion of attracting the attention of imitators, Mr. Goodyear took no patent for this article, but he endeavoured in Europe to take advantage of his discovery, by communicating it as a process of which he alone possessed the secret, which might be lost to mankind, and disappear with its sole possessor, when Mr. Thomas Hancock, of Stoke Newington, who had been engaged in Europe in the working of caoutchouc with no less perseverance and success than Mr. Goodyear in America, discovered anew the process of the vulcanisation of India-rubber, and secured it by a patent, which Mr. Goodyear afterwards demanded for the same subject. Mr. Thomas Hancock discovered that a band of caoutchouc dipped into melted sulphur, and impregnated with this substance, without losing any of its properties, only required to be afterwards exposed to a temperature of about 300 degrees Fahrenheit, to acquire properties entirely novel, which were precisely those possessed by the material employed by Mr. Goodyear for the waterproof shoes.

This was, as may be seen, a new discovery of a fact already known—a novel solution of a problem which was known to be soluble, since it had been already solved. This discovery must, however, have presented its difficulties, and required also the fortuitous co-operation of favourable circumstances. For though analysis might have pointed out to Mr. Hancock the existence of sulphur in the productions of Mr. Goodyear, and have also disclosed the presence of the salts of lead which the latter had deemed indispensable, it could not in any manner give him a clue to the discovery of the essential condition of this transformation, that is to say, the employment of a given temperature, which alone was able to impart to the mixture of caoutchouc and sulphur the new properties which appeared to make of it an entirely new body. Whatever may be the share of merit assigned to Mr. Goodyear and to Mr. Hancock in this important invention, the latter has not the less exclusive merit of having discovered that sulphur was the sole cause of the vulcanization of India-rubber. On seeing Mr. Charles Goodyear introducing the different salts of lead into the specification of the patent which he subsequently took out, it is felt that he regarded their intervention as indispensable, while it is now demonstrated that sulphur alone is sufficient; if other substances are employed in certain cases, it is not so much to aid in the vulcanization of the caoutchouc as to add to its weight and solidity. The vulcanization of India-rubber is an easy process. The India-rubber, softened by the heat evolved when it is being kneaded by strong machines, is mixed with the sulphur in the masticating apparatus already alluded to. This mixture retains all the solubility of the caoutchouc in the different menstrua—the property of becoming hard at a low temperature as well as that of uniting with itself; but as soon as it is exposed to a temperature of 300 degrees Fahrenheit—a temperature which would have sufficed to change the pure caoutchouc—the matter acquires new properties. It is no longer soluble in the menstrua which dissolve caoutchouc, but is impregnated with them by contact, and swells out like an animal membrane that is moistened with water; resuming its primitive properties on being dried. It no longer becomes rigid when exposed to cold, nor does it unite with itself, and it resists without any alteration a temperature which would have sufficed to transform the ordinary caoutchouc into a sticky matter; it is, in short, vulcanized India-rubber. This absence of the tendency to adhesion is so decided, that in actual manufacture no use whatever can be made of the shavings of the caoutchouc thus modified, and the means of separating the sulphur and reproducing the pure caoutchouc presents at the present day an important problem to solve.

If this action of heat which modifies the caoutchouc is exercised upon a mixture enclosed and compressed in a mould, the material then acquires a form which the indefinite and permanent elasticity of the vulcanized India-rubber causes it to retain. This sulphurization of the India-rubber, instead of being produced with free sulphur, may be obtained with sulphur in a state of combination, as with the chloride of sulphur. If articles of common caoutchouc are immersed for one or two minutes in chloride of sulphur, diluted in fifty or sixty times its weight of sulphuret of carbon, they acquire, by exposure to a proper temperature, all the properties of vulcanized India-rubber. In commerce this caoutchouc is designated by the name of converted caoutchouc. From the moment in which the vulcanization of India-rubber was known, all the inconveniences which ordinary caoutchouc presented having disappeared, its employment received an extension which is continually increasing, and each year sees new applications of this product spring into use. The enumeration of the objects exhibited by the two manufacturers to whom this branch of manufacture is the most indebted, Mr. Goodyear, in America, and the firm of Mackintosh, in Europe, will tend to show how widely spread, and how varied the use of this material has already become.

MANUFACTURE FROM GUTTA PERCHA.

The substance designated by the name of gutta percha, is, like caoutchouc, a carburet of hydrogen, and isomeric with that substance, and possesses a great number of the properties which characterize India-rubber, but exhibits certain special properties which admit of its being applied to particular uses to which caoutchouc is not adapted. Gutta percha possesses as great an indestructibility by means of chemical agents as caoutchouc. It has an intermediate consistence between that of leather and wood; it is capable of being softened by heat, and of regaining its primitive consistence on cooling. It is, therefore, at the same time, capable of taking, and of retaining the most delicate impressions. The important uses to which it has been latterly applied, are only the forerunners of those to which it will be adapted hereafter, provided the lack of this precious material (which unfortunately is produced in much less quantities than India-rubber, and in localities much more circumscribed) does not present an obstacle to it. Whilst the plants which furnish caoutchouc abound in the whole of the territorial zone which extends between the tropics, the *Isonandra gutta*, belonging to the natural order Sapotacea, is the only tree which yields gutta percha. It grows scarcely anywhere, except in certain parts of the Malayan Archipelago, and, up to the present time, has been almost exclusively obtained from Singapore. It was brought for the first time into England in the days of Tradescant, as a curious product, under the the name of *Mazer-wood*, and subsequently it was frequently brought from China and other parts of the East, under the name of India-rubber, in the form of elastic whips, sticks, &c. In 1843, Doctors D'Almeida and W. Montgomery drew particular attention to it, together with its various singular properties, its easy manipulation, and the uses for which the Malays employed it. The most common employment of it was for whips; and it was by the introduction of a horse-whip made of this substance, that its existence was for the first time known in Europe. The exhibition of the products of the East Indies, shown by the Honourable East India Company, proves that the natives of the country in which the *Isonandra gutta* grows, knew also how to appropriate it to the manufacture of different kinds of vases, and that European industry has little more to do than to imitate their process.

The importation of gutta percha into England, where the employment of this substance first drew attention, was in 1845 only 20,600 lbs.; but in 1848 it had increased to above 3,000,000 lbs.; and during the last three years, the importation has amounted

to a much larger quantity, and one which begins to cause some apprehension as to the possibility of the supply sufficing for the requirements of the novel uses in store for it in the future. It is true, that during its use, gutta percha is but little consumed, and the waste from the articles in this material, submitted to a proper softening, can be made to serve new uses; nevertheless, its constantly increasing consumption, added to the barbarous manner in which the product has hitherto been extracted, may justify some apprehension. During the first few years of the employment of gutta percha, it was the custom to cut down the tree for the purpose of obtaining the juice, which, left to itself, very soon allowed the gutta percha to separate and coagulate of its own accord. There is reason to hope that European industry will soon be embarked in the cultivation of this product, and that the *Niato* (which is the name that the Malays give to the tree which produces gutta percha), multiplied by means of a regular culture, naturalised in other countries than those to which it is indigenous, and worked by regular incisions, which will only take from the tree a portion of its juice without hindering its development, will be the means of furnishing, at a low price, a substance which is destined to render notable services to industrial and domestic economy. The gutta percha, which arrives in Europe in the form of lumps of some pounds weight, is far from being pure. The natives of the Malayan Archipelago make no scruple of introducing into it stones, earth, &c.; the presence of which in the interior of these blocks renders a purification indispensable, which purification, however, is capable of being attained without much manipulation. Ever since its first introduction into Europe, gutta percha has, in fact, found everything provided for the purpose of cleansing it, and has been found capable of being worked by the processes and instruments which are employed in the purification of India-rubber. At the present day the block of gutta percha, cut into slices by a strong machine, is softened by means of hot water, divided and torn into shreds by the same machine that is used for India-rubber, which serves to knead the gutta percha in such a manner, that the crushed stones and earth may be separated from it on being diluted in the water; it is then dried, and submitted, by means of a powerful machine, to a mastication similar to that which India-rubber is made to undergo; and when, after some hours of kneading, the mass has become homogeneous and sufficiently softened, it is drawn by the drawing-mill into cylindrical cords, into tubes of various diameters. or it is spread out by means of the flattening machine (as is done with lead) into sheets of various thicknesses, which are finally divided into bands, from which are cut out, with a ripping tool, the pieces which are required to be employed in different uses.

Whatever difficulty manufacturers may have had in procuring gutta percha fit to be made use of, they have at least been able to concentrate their efforts upon the discovery of uses to which it is adapted; and in the space of a few years have discovered numerous and important ones, as may be witnessed in the beautiful exhibition made by the Gutta Percha Company. One of the first and principal uses of gutta percha was to supersede the leather bands employed in machinery for the transmission of movements. This is very nearly the only use to which it has hitherto been employed in France. It seems, moreover, that latterly in England some inconveniences have been found to result from this employment of gutta percha; but should its use for that purpose diminish, every day others are found for it. Indestructible by water, and at the same time a bad conductor of electricity, gutta percha has been found available for enclosing the metallic wires employed in the electric telegraph; and the use of this substance may certainly claim its share in the success of the submarine telegraph, which has just brought London and Paris within a few minutes of each other. It may be conceived to what a variety of forms a substance can be turned, which becoming soft without adhering at the temperature of boiling water, regains at the ordinary temperature the slight elasticity and

the consistence of leather. Thus agriculturists and manufacturers have turned it to account for the fabrication of buckets of all kinds, light, indestructible, and capable of being mended by a slight degree of heat and pressure when they are worn out. It is especially in the manufacture of articles for maritime use that gutta percha, resisting as it does the action of water, and especially of salt water, appears to be the best adapted. Buoys of every description for anchors, nets, &c., have been made of it; sailors' hats, speaking trumpets, &c. There is no doubt that it will be brought to perform a useful part in waterproof garments, as well as in the construction of life-boat apparatus. If India-rubber has been advantageously combined with leather, it may be conceived that the combination of gutta percha with wood, of which Mr. Foster has shewn a specimen at the Exhibition, may in certain cases offer peculiar advantages. The decorative art has also taken advantage of the plastic properties of gutta percha. All those different articles of furniture, the prices of which are so much enhanced by carving, are capable of being reproduced by means of pressure, and thus multiplied at a low price. Writing-tables, work-baskets, &c., can be produced in gutta percha, and thus be made to combine the threefold advantage of lowness of price, elegance of form, and absence of fragility.

In the large manufactory which is more especially devoted to the employment of gutta percha, are made every day a great quantity of mouldings, friezes, panels, leaves, &c., and of articles of every description. These, combined by the decorator, covered with gilding (which gutta percha takes in perfection), are, in the manufacture of picture frames, and in the decoration of furniture, capable of superseding the carving upon wood, which is so costly, or papier-maché, and carton-pierre, which presents the defect of great fragility. On going through the exhibition of Messrs. Thom & Co., as well as that of the Gutta Percha Company, we may judge of the extent which the employment of this substance promises to the decorative art by the imitation of carving upon oak, rose-wood, &c. Bronze articles have also been reproduced in a felicitous manner; and the clearness of the edges and the purity of the forms make it easy to understand how gutta percha has been found capable of being used for making galvano-plastic moulds, and how some experiments have begun to be tried for the purpose of substituting this material in the process of stereotyping, for the metal with which at the present day the pages of our illustrated books are multiplied. This employment of gutta percha for the reproduction, by pressure, of objects for interior decoration cannot but be widely extended, enabling the many to enjoy those graceful and elegant forms which, as long as they could not be reproduced in a material indestructible by water and free from fragility, could only be brought within the reach of the few.

Quite recently, by the exertions of Mr. Truman, a lump of coloured gutta percha, moulded into the form of a jaw-bone, has been found capable of holding together artificial teeth, and thus advantageously superseding those settings in gold, which were so costly, and the absolute rigidity of which, moreover, presented much inconvenience. The slight but sensible elasticity possessed by gutta percha renders it, on the contrary, very well adapted to this use. There is another use to which the exertions of H. Mapple have rendered gutta percha applicable. Soles of this substance, glued on to the upper leathers by means of gutta percha dissolved in gas-tar, constitute shoes which are not affected by water, which last a long time, are very simple and economical in their make, the soles of which are easily mended, and easily put on again when they come off, and can be made to serve anew by means of a fresh kneading up when they have become unfit for use; thus constituting a description of shoes, the use of which cannot fail to become extended in such a general manner as to render notable service to health. Gutta percha soles have also been found capable of being affixed with much advantage upon leather soles. This solution of gutta percha in the oil of tar, like that of caoutchouc,

which, by its evaporation, leaves the caoutchouc uninjured, can be made use of to obtain sheets of gutta percha of extreme thinness, which have already been begun to be used in surgery, as well as in the preparation of waterproof papers and cloths. It is more especially to the manufacture of chemical utensils for the preservation and conveyance of acids, that gutta percha seems destined to render the greatest services. Latterly pumps for hydrochloric acid have been made of it, pipes for conveying this acid, bottles in which to send it away; large wooden vessels have been lined with gutta percha, in which to preserve the acid; gasometers are being constructed, which will be capable of collecting the sulphuric acid disengaged in certain chemical actions, and which would have corroded metallic vessels.

A council medal was awarded to the Gutta Percha Company for their various novel applications of this substance, and for the extensive specimens they exhibited. A prize medal was also awarded to the West Ham Gutta Percha Company, for the rich variety of objects they exhibited, amongst which, one of the most conspicuous was a group representing a boar hunt, covered with a metallic coating in imitation of bronze, which displayed the success with which gutta percha may be employed in the decorative and even fine arts. The exhibitor succeeded in combining gutta percha with sulphur and the metallic sulphurets, to which the name "metallo-thianised" gutta percha has been applied. The gutta percha thus treated is as hard as ebony, and can be used for most purposes to which wood and ivory are generally applied.

CHAPTER XII.

SUBSTANCES USED AS FOOD.

AMERICA, ITS RAW PRODUCE—SCOTLAND, MESSRS. LAWSON AND SON — AGRICULTURAL SEEDS, GIBBS AND CO.—MALT AND HOPS—BEER—CHAMPAGNE—TOBACCO—ASSAM TEA—COFFEE—CHICORY—COCOA—PARAGUAY TEA—PRESERVED MEATS—PRESERVED VEGETABLES—CANADIAN PRODUCTS—NEW BRUNSWICK — NOVA SCOTIA—AUSTRALIA—NEW ZEALAND — CAPE—FRENCH PRESERVED MEATS— AUSTRIAN CONTRIBUTIONS — SPAIN—SWITZERLAND— UNITED STATES — MEAT BISCUIT — OSMANZONE—PRESERVED MILKS— CAVIARE, ZUPANG, ETC.—BIRD'S NESTS— PREPARATIONS OF BLOOD—HONEY—ISINGLASS.

In inviting the attention of our readers to the consideration of Food, we confess we are no disciples of

> "———— Those budge doctors of the Stoic fur,
> Who fetch their precepts from the Cynic tub,
> Praising the lean and shallow abstinence."

We urge that moderation in the use of the good things of this life is a far superior virtue than that of total abstinence; and we hold to the sentiment expressed by Milton, which we take to be his own, albeit he has put it into the lips of Comus—rather a questionable authority, our adversaries may suggest. Let us see, however, what the jolly reveller advances, for truth is valuable, from whatever source it may proceed—

> "———— If all the world
> Should in a pet of temperance feed on pulse,
> Drink the clear stream, and nothing wear but frieze,
> Th' All-giver would be unthanked, would be unpraised,
> And we should serve him as a grudging master,
> As a penurious niggard of his wealth,
> And live like nature's bastards, not her sons."—*Comus.*

Let us, then, now open our eyes and admire the vast fertility of nature, and contemplate with thankfulness the various means of food and subsistence that the bounteous hand of Providence has provided for the benefit of mankind. An American gentleman, walking through the Exhibition, was somewhat cheered, when looking round on the empty spaces and half-filled cases devoted to the United States, by the remark of an Englishman, that at any rate America had the advantage in her specimens of corn and maize and salt meat, which might be said to be the raw material of the whole Exhibition. This is a true statement of the fact, and it indicates the most important relation of America to Europe. The inhabitants of the Old World do not seek the shores of the New to indulge their taste in the fine arts, or provide themselves with luxuries to deck their tables and adorn their palaces. It is the demand for food—lying at the root of all more transcendental tastes—which drives the European to America. How fitly, then, were the United States represented by ploughs, harrows, drills, waggons, sacks of corn, ears of maize, and barrels of salt meat—by indications of the space and specimens of the fruits which they had to offer to an over-crowded continent! It was one of the drawbacks to the testing here the substances used as food, that the visitor was not allowed to try them by the sense to which they especially appeal. We can, therefore, report only from sight; and, so far as that enabled us, with regard to the United States' exhibition of these articles, we may say that the samples of wheat, maize, and other grain, indicated at once the fertility of the soil and the good management of the farms on which they were grown. It is not our intention to speak generally of the substances used as food which were to be found throughout the various divisions of the great Exhibition, but more particularly of Class III., according to the catalogue. First, let us take those from the vegetable kingdom. In this department were found a very extensive series of cases and fittings devoted to a display of the vegetable substances used in food, medicine, and the arts from Scotland. This Scotch exhibition was almost an epitome of the raw produce of the vegetable kingdom throughout the British islands, as there are few things of any use that will grow in any other part of this country that will not grow in Scotland. These specimens, which had been got together by the Messrs. Lawson and Son, of Edinburgh, were regarded with interest on account rather of their completeness than of their rarity. Here we had the various cereal grasses of Europe, as wheat, barley, oats, rye, &c., and the varieties which are commonly grown in Scotland, or which are produced in that country as used in other parts of the world. Not only were there exhibited the grains or fruits of those plants which are employed, and the various substances which are manufactured from them, but we had dried specimens of the plant in blossom, and during the time of the ripening of its fruit. The various kinds of farm and garden produce used for food were also represented here. In cases where the vegetable substance could not be kept or dried, wax casts were substituted. Thus, we had a series of specimens of roots, as carrots, turnips, &c. Casts also of rare specimens of curious forms, and of the varieties cultivated were exhibited. The grasses grown and used as fodder for animals were shown on the same scale. On either side of the entrance to this Scotch compartment in the south gallery were found two living specimens of an interesting grass, the Tussack grass (*Dactylus cæspitosa*), a native of the Falkland Islands, which have been grown in the Western Hebrides, and have produced flowers and seeds, so that it may be hoped this valuable grass may be shortly naturalized amongst us.

Most of our native British plants which are used in medicine were also to be found in this collection. In the glass cases looking north were a series of blocks of wood in their rough and in their polished condition, with also dried specimens of the branches, leaves, and flowers of the plants that have yielded them. Those who were anxious to gain a general view of the products of the vegetable kingdom in Great Britain, might have

referred with unhesitating satisfaction to this collection of Scotch vegetable products. Of the agricultural produce, generally, exhibited in this department, we may say that there were very fine specimens of wheat and barley, also of malt. The Messrs. Gibbs and Co. had a large space devoted to them for the display of various agricultural seeds. We did not observe anything new in this collection; but it was found of interest to the practical agriculturist, as affording a view of the seeds employed in British agriculture at the present day. We were sorry, however, to be obliged to find fault with the unsightly appearance of the table on which these seeds were spread, and with the enormous loss of space attendant on their arrangement, which, far from assisting in their examination, almost entirely prevented it. From barley and malt we naturally turn to hops; and here we found several specimens from various parts of England. In this department we observed some enlarged drawings of the hop fungus—a very destructive growth on the hop—by Dr. Plomley, of Maidstone. Had a like plan been generally adopted, we might have had some interesting observations on the diseased conditions of food which sometimes play such dreadful havoc, as in the case of the potato disease. In the chemical department we found a glass case illustrative of the making of beer in this country. It would, indeed, be a blessed time for this beer-drinking country if all its beer were made from the materials exhibited here. Malt on one side, hops on another, a glass cask of porter on another, and a glass cask of ale on the other, revealed the true receipt of how to make good beer. Beer reminds us of the section of "intoxicating drugs, fermented liquors, and distilled spirits;" which, although some persons regard them as belonging to the class of poisons, were placed by the executive committee under the class "Food." The distilled liquors and wines exhibited here must have been from "unusual sources." There were, however, a few bottles of what, judging from the outside, looked like genuine champagne. Whether the grape be an unusual source for champagne or not, there are few persons who will deny that rhubarb *is:* and amongst the few wines of the Exhibition, this rhubarb champagne deserves a passing notice. Vain, however, must be the hope of wine-makers to get any substitute for the juice of the grape until they shall meet with something which contains the same compounds as the berry of the grape. In this department, the lovers of tobacco might regale their eyes and nostrils with an exhibition of the various forms which that substance assumes for the indulgence of its admirers. Of course, smoking was not allowed; and the tobacco on the British side, in the form of snuff, was not in a condition to be applied to the olfactory nerve. But the snuffers were better off than the smokers in the Exhibition: for there were no frowning notices in seven different languages forbidding them to indulge in their favourite luxury,—and the liberality of the Portuguese exhibitors of snuff had provided for every visitor a pinch. We understand from those who are judges that this Portuguese snuff was very excellent, and likely to produce a sensation in the snuff-taking world.

From snuff and tobacco the transition is natural to tea, coffee, and chocolate. The exhibition of tea was quite on a small scale:—a few samples of the different varieties of black and green from Assam constituting all that was to be seen in Class III. We have not yet sufficiently explored India and China, to say what these countries might exhibit. The specimens mentioned are, however, interesting, as indicating that tea may be grown in our Indian possessions, and may ultimately become a source of great commercial advantage to ourselves, and benefit to India. In coffee there was more than was novel. One exhibitor separated a quantity of useless vegetable tissue from the coffee, and thus secured a purer form of the raw material. Dr. Gardiner, of London, has discovered that the leaves of the coffee plant contain *caffeine*, a principle identical with that obtained from tea-leaves, called *theine*. It is generally admitted that these principles are the source of the utility of both coffee and tea as articles of diet. Dr. Gardiner proposes to dry the

coffee-leaves, and use them as we do tea-leaves. As he has procured a patent for his process of preparation, we suppose we may expect shortly to hear something more of this discovery. In addition to coffee, we had several exhibitors of chicory; so that people may become acquainted with the appearance of that which in their coffee they appear so constantly to taste. The produce of the cocoa tree (*Theobroma Cacao*) had numerous exhibitors. The seeds of this plant contain an active principle called *theobromine*, in addition to a fixed oil and other alimentary substances. Ground down, these seeds form cocoa paste. Mixed with vanilla, they constitute chocolate. When sugar is added, the chocolate has an agreeable taste; and it is used very extensively as an article of diet in France. It is gradually finding its way into England; and various Paris manufacturers competed here for notice and favour from the English, who might be disposed to try this new food. Hitherto the English have too much regarded this substance as a substitute for tea and coffee. That it is so, there can be no doubt, as it possesses the principle *theobromine*; but it is something more, and contains nutritive ingredients which are not found in either tea or coffee. The Exhibition served to call more attention to chocolate as an article of diet. Before leaving this subject, we would call attention to some specimens of Paraguay tea (*Ilex Paraguaensis*), which is the only substance that in any part of the world can be fairly said to compete with tea, coffee, and chocolate. It is curious that this plant is found to contain a principle identical with *theine*. It is used for making tea by the natives of South America. It would make a good and cheap substitute for tea in this country, but it is not allowed to be imported.

We extract the following notices from the juries' reports:—

PRESERVED ALIMENTARY SUBSTANCES.

It is impossible to over-estimate the importance of these preparations. The invention of the process by which animal and vegetable food are preserved in a fresh and sweet state for an indefinite period, has only been applied practically during the last twenty-five years, and is intimately connected with the annals of Arctic discovery. The active measures taken to discover a north-west passage, and to prosecute scientific research in all but inaccessible regions, first created a demand for this form of food; and the Admiralty stimulated the manufacturers to great perfection in the art. As soon as the value of these preparations became generally admitted in cold climates, their use was extended to hot ones, and for the sick on board ship under all circumstances. Hitherto they had only been employed as a substitute for salt beef or pork at sea, and, if eaten ashore, it was at first as a curiosity merely. Their use in hot climates, however, speedily became evident, especially in India, where European families are scattered, and where, consequently, on the slaughter of a large animal, more is wasted than can be consumed by a family of the ordinary number. The consumption of preserved meats became at once enormous; hundreds of tons are annually exported to the East Indies and all our colonial possessions, and many are consumed by our fleets. The cheapness of these preparations is most remarkable. This arises from the processes and materials for the cases being inexpensive, and from there being no waste of the meat: all that is good goes into the case, which is always filled. It is affirmed by the manufacturers and others, and probably with truth, that meat in this form supplies troops, and the fleet, with a cheaper animal diet than salt provisions, from avoiding the expense of casks, leakage, brine, bone, shrinking, stowage, &c., which are all heavy items, and entail great waste and expenditure; added to this, the damage of one cask of salt meat risks the loss of all its contents, whilst the meat canisters are, comparatively speaking, imperishable, and an accident to one occasions a loss of at most but from two to four pounds of food.

Several hundred canisters of meat were exhibited from various countries, and in some

of these by many different persons. Their merits were tested by a selection from each: the cases were opened in the presence of the jury, and tasted by themselves, and, where advisable, by associates. The majority are of English manufacture, especially the more substantial viands; France and Germany exhibiting chiefly made dishes, game, and delicacies—of meat, fish, soups, and vegetables. The jury desire to draw attention to the fact of viands of this description being extensively prepared in Australia, Tasmania, the Cape of Good Hope, Canada, &c., of equally good description with the English. Animal food is most abundant and cheap in some of those colonies. In Australia, especially, during seasons of drought, it is wasted in extraordinary quantities; flocks are slaughtered for the tallow alone, and herds for their bones and hides. Were the meat on these occasions preserved, it cannot be doubted that it could be imported into England, and sold at a cheaper rate than fresh meat in our metropolitan markets, to the great benefit of the lower classes. Among all the preparations exhibited by France, England, &c., there is no perceptible difference either in the mode or perfection of preservation. To seal, hermetically, full tin canisters is the general principle adopted; and it is effected by plunging them in boiling water, and soldering; a small orifice left purposely, by which all the air is expelled; this principle, variously modified, being the same throughout. The contents of all the cases, of whatever kind, have lost much of the freshness in taste and flavour peculiar to newly-killed meat; they are always soft, and, as it were, overdone; the nutritious principles are, however, perfectly preserved. As nutriment, they are unexceptionable; they are wholesome and agreeable, and often pleasantly flavoured. Vouchers were given for some of the samples tasted by the jurors having been preserved for twenty-five years and upwards: these were in a perfectly sound state, and did not perceptibly differ from the contents of canisters only a few months old. So long as the sealing remains sound, the viands appear to undergo no change. Any difference between the contents of the properly-prepared cases is to be attributed to the state of the food before preparation, or to the cooking, and not to the method employed for preserving, which is simple and universally applicable. Vegetables, preserved in a similar manner, have been considered by the jury with the animal food. Generally speaking, their flavour is fresher than that of the meats; especially in the case of those abounding in saccharine principle, as beet, carrots, parsnips, salsify, which preserve to advantage. The more farinaceous do not preserve so well, such as green peas, &c.; whilst those abounding in volatile oils are hardly worth preservation at all (especially cabbages, turnips, and celery), except as anti-scorbutics.

Mr. E. Mason's dried compressed vegetables demand especial notice, as shewing one of the remarkable discoveries of modern times in this branch of manufacture: they have been awarded a council medal. By Mr. Mason's process the most bulky, soft, and succulent vegetables are reduced to a fraction of their volume, and are preserved in a dry, indestructible state. After boiling for a rather longer time than usual, they are restored to something of their original form and consistence, retaining all their nutritious principles, and much of their flavour. Chollet & Co., the manufacturers of these preserved vegetables use only dessication and compression in the process, which is Mason's invention. According to a statement published in the "Comptes Rendus," as read before the Paris Academy, the vegetables are reduced seven-eights in weight, and proportionally in bulk. They require to be boiled for one hour-and-a-half to one hour and three-quarters, and on cooling are found to have regained nearly all their evaporated juices. If, as the jurors have reason to believe, these preparations retain their good qualities for several years, they cannot be too strongly recommended to public attention. It would probably be necessary for long voyages, that these square cakes be packed in perfectly dry casks or tanks as biscuits are. In the British Department, J. H. Gamble, and Ritchie,

and M'Call exhibit very fine samples of preserved viands and vegetables, and to each a prize medal is awarded for excellence of material and preservation. Ritchie and M'Call's deserve especial notice for the great size of the pieces of meat, combined with all the firmness of texture that is attainable. All are said to be prepared by Goldner's process, the results of which are equal, but not superior to the ordinary process, as far as the jury could decide, after a very protracted examination and comparison. A preserved pig, entire, a conspicuous feature in the English Department, deserves notice as a remarkably successful instance of curing on a large scale.

Canada deserves a very prominent mention for the abundance and excellence of the preserved viands exhibited; but all are of the ordinary description of cured meats, and none have any particular merit or novelty to entitle them to reward, except the hams of G. Reinhardt, of Montreal, which have been awarded a prize medal. There are barrels of beef, pork, and tongues, cases of smoked hams, bacon and sausages, kegs of lard, &c., all produced at a remarkably cheap rate. Numerous other articles were noticed by the jury, some with honourable mention, and some with the distinction of prize medals. Excellent preserved salmon was exhibited by New Brunswick and Nova Scotia; preserved fresh meats from Australia in all respects equal to the English; admirable boiled mutton in tin cases by the Newcastle Preserving Company, no whit inferior to the English. Van Diemen's Land sent excellent hams and preserved meats; New Zealand furnished dried mullets, while store of salt beef and pork travelled to the general mart from the Cape of Good Hope. In short, the abundance of good cheer that was displayed on every side, would have more than sufficed to furnish a hundred such bridal feasts as were spread out by the rich Comacho before the wondering eyes of the delighted Sancho Panza, as the illustrious Cid Hamet has recorded in his most entertaining history. Of a more *recherché* and delicate quality were the contributions from the land of the Gaul, the land of exquisite cookery and scientific *gourmandise*, differing from those of England, in being articles of luxury rather than of common use. Meat, fish, and vegetables, with their various combinations of savoury sauces, were delicately offered to the taste of the experienced connoisseur. Austria supplied a *quantum suff.* of solid fare, hermetically sealed; and moreover dispatched a flight of preserved larks, which obtained honourable mention from the gentlemen of the jury. Spain acquired a prize medal for her hams of Montanchis, sent from the Borough of Aviles. D. H. Carstens, of Lubeck, had a prize medal awarded to him for his tin cases of provisions. Switzerland, with the thrifty economy natural to her people, exhibited fish and meats, dried and preserved in a fresh state by simple dessication, a remarkable peculiarity, and one which obtained a prize medal for the inventor, H. Baup. The specimens, however, wanted flavour, and were discoloured, although perfectly fresh and sweet. Simplicity and cheapness were the great recommendations of these articles. Russia exhibited fish, apparently in excellent condition. The United States were unrivalled in their display of hams, which were declared by competent judges to be unsurpassable. Two prize medals testified the approbation of the jury on this subject, to Charles Duffield, of Louisville, and Schooley and Hough, of Cincinnati. The *cream*, however, of American produce, was the meat-biscuit of Gail Borden, a more concentrated food than which was never brought before the public. The exhibitor combined the best wheat flour with the nutriment of the finest beef, and presented them for use as food in the form of a dry, inodorous, flat, brittle cake, which will keep dry for an unlimited period. It only requires hot water and seasoning to the taste to produce a first-rate, agreeably-flavoured, highly-nutritious soup, somewhat of the consistence of sago. One pound of the biscuit grated, and boiled in a pint of water, forms a rich nutritious soup. It is averred by the inventor, and he was supported by authority satisfactory to the jury, that ten pounds of this substance, with

a proper allowance of water, afford, both in bulk and nutriment, food sufficient to support the physical and mental powers of a healthy working man for a month. A council medal was awarded to the inventor.

The osmazone exhibited by G Warriner, is the nutritious matter or juice of meat, which is set free during the operation of boiling down fat for tallow in Australia. This is afterwards concentrated, and preserved in the form of sausages. A great amount of nutriment is thus obtained in a portable form, and when boiled with gelatine, it forms a palatable diet. The price is very moderate, one shilling per lb., and it hence commands a market, and is much used to form a gravy-meat. The exhibitors declared that one pound weight is equivalent to the nutriment of thirty lbs. of fibrine, which argues a high economic value. Several specimens of preserved milks were submitted to the inspection of the jury. Of these, the concentrated preserved milk of E. D. Moore, received a prize medal. It contains all the nutritious qualities, and much of the flavour of fresh milk. Russian caviare, of the finest quality, was exhibited by Nikita Vsevolodowitch Vsivolosjky, and received honourable mention. Borneo and Singapore both supplied Trepang, or sea-slugs, in considerable abundance, no doubt a very delicate morsel, as we may also suppose are the swallow's nests, which the Chinese exhibited, of first-rate quality. Shark's fins, too, of which the Chinese are extravagantly fond, were also largely exhibited. Leaving these dainties, however, we arrive at the elegant manufacture of Nature's own artisans, whose unfailing excellence and chemical achievements no human art or industry has ever yet attempted to rival. Honey, from various quarters of the world, including that from far-famed Hymettus, was submitted to the inspection of the naturalist; and many specimens received prize medals or honourable mention. The next article which attracted our attention was entitled "Preparations from Blood," and we confess it awakened in us somewhat of antipathy and disgust, familiar as our more homely tables have long been with the occasional display of—

> "Black puddings, proper food
> For warriors that delight in blood."

The jury, however, has succeeded in describing the dish as so dainty a one, so nutritive, and so economical, assuring us at the same time that its inventor, P. Broechieri, was deemed worthy of honourable mention, that we do not hesitate to promise that we will ourselves taste of his dish, should it ever come before us, and pronounce accordingly on its merits, or otherwise, as the case may be. Isinglass, as exhibited by Dr. MacClelland, obtained the honour of a prize medal; and with this announcement we close our remarks on the important and popular subject of Food.

CHAPTER XIII.

WORSTED, ALPACA, AND MOHAIR MANUFACTURES.

EARLY USE OF WOOL IN ENGLAND—THE MOTHER OF ALFRED THE GREAT—EDWARD THE ELDER—FULLER'S CHURCH HISTORY—THE GOLDEN FLEECE—DUTCH WEAVERS—NORWICH—BRADFORD—HALIFAX—THE ALPACA—MOHAIR—RUSSIAN MANUFACTURE—FRENCH ARTICLES—ENGLISH MACHINERY—IMPROVED STATE OF SOCIETY.

The term "worsted stuffs," is applied to those manufactures, into the composition of which wool enters, that have undergone the process of *combing*, and includes those fabrics

in which wool, thus combed, is combined with cotton and with silk. The name "worsted" is derived from a village in Norfolk, where these goods were first produced. These fabrics are to be distinguished from "woollen cloths," the chief characteristic of which is, that they undergo the well-known process of "felting" or "fulling." In opening up a number of fleeces, a distinction is easily observable between the wool of short and that of long staple. The short wool, if examined by a microscope, is noticeable for the immense number of little feathery serrations, or imbrications on its surface, which enable the individual fibres to be locked into one another by the felting process; and this wool is accordingly most used for the production of woollen cloths. The longer wool does not possess these serrations to the same extent, and is better suited for combing, the object of which is to unravel all the fibres, and lay them smooth and even. From the earliest times of English history, wool has always been regarded as our great national raw material for woven goods. The mother of Alfred the Great is described, like the virtuous woman spoken of in the Book of Proverbs, as busying herself diligently in spinning wool. Of Edward the Elder, an old chronicler tells us, that whilst "he sette his sons to schole, his daughters he sette to wool-werke." Nor was wool regarded with less favour by our early sovereigns as a means of replenishing the royal exchequer. No subsidies are more common as granted to the crown, than those on wool, and no articles more frequent subjects of legislative interference than wool and its manufactures. Amongst other instances of the wisdom of our ancestors it was at one time provided that no wool "should be sold by any man of Scotland, or to any other to carry into Scotland," under pain of life and member. A paternal government attempted to regulate the length, breadth, quality, and price of the cloth to be produced, and prescribed the wages and diet of the artificers. There seems little doubt that the first great impulse to our manufactures from wool of all kinds was given by the prudence and patriotism of Edward III., who encouraged cloth-workers from Flanders to settle in Norfolk, York, Kendal, and other places. It is scarcely to an ecclesiastical writer that we should look for manufacturing details; yet the witty Fuller, in the third book of his *Church History*, so pleasantly describes this event, that I am sure our readers will pardon us for transcribing the passage:—"The king and state began now to grow sensible of the great gain the Netherlands got by our English wool: in memory whereof, the duke of Burgundy, not long after, instituted the order of the Golden Fleece; wherein, indeed, the *fleece* was ours, the gold theirs, so vast their emolument by the trade of clothing. Our king therefore resolved, if possible, to reduce the trade to his own country, who, as yet, were ignorant of that art, as knowing no more what to do with their wool than the sheep that wear it, as to any artificial and curious drapery; their best clothes then being no better than friezes, such their coarseness for want of skill in their making. But soon after followed a great alteration, and we shall enlarge ourselves in the manner thereof. The intercourse now being great betwixt the English and the Netherlands (increased of late, since king Edward married the daughter of the earl of Hainault), unsuspected emissaries were employed by our king into those countries, who wrought themselves into familiarity with such Dutchmen as were absolute masters of their trade, but not masters of themselves, as either journeymen or apprentices. These bemoaned the slavishness of these poor servants, whom their masters used rather like heathens than Christians; yea, rather like horses than men! Early up and late in bed, and all day hard work and harder fare (a few herrings and mouldy cheese), and all to enrich the churls their masters, without any profit unto themselves. But, Oh! how happy should they be if they would but come over into England, bringing their mystery with them, which would provide their welcome in all places! Here they should feed on fat beef and mutton, till nothing but their fulness should stint their stomachs; yea, they should

feed on the labours of their own hands, enjoying a proportionable profit of their pains to themselves; their beds should be good, and their bedfellows better, seeing the richest yeomen in England would not disdain to marry their daughters unto them; and such the English beauties, that the most envious foreigners could not but commend them. Liberty is a lesson quickly conned by heart, men having a principle within themselves to prompt them, in case they forget it. Persuaded with the premises, many Dutch servants leave their masters, and make over for England. Their departure thence (being picked here and there), made no sensible vacuity, but their meeting here all together amounted to a considerable fulness. With themselves, they brought over their trade and their tools; namely, such as could not as yet be so conveniently made in England. Happy the yeoman's house into which one of these Dutchmen did enter, bringing industry and wealth along with them. Such who came in strangers within their doors, soon after went out bridegrooms, and returned sons-in-law, having married the daughters of their landlords who first entertained them. Yea, those yeomen in whose houses they harboured soon proceeded gentlemen, gaining great estates to themselves, arms and worship to their estates."

There is no doubt that the manufacture of worsted stuffs was introduced or improved at this time, for, in the account of exports in the twenty-eighth year of Edward the Third's reign, we find mention of "8,061½ pieces of worsted, at 16*s*. 8*d*. per piece." The county of Norfolk became then, and continued for four centuries, the main seat and centre of the trade. So great, indeed, became the prosperity of the city of Norwich, that when Queen Elizabeth visited it in 1578, we are informed by the city records, that a grand pageant was exhibited, representing seven looms weaving worsted, russets, darnic, &c., with various devices; and that her majesty particularly examined the knitting and spinning of the children, perused the looms, and noted the several works and commodities that were made. The manufacturing processes at this period were characterised by the most primitive and arcadian simplicity, and a degree of "slowness" which, in these railway times, we can scarcely realise. The work was entirely domestic, and its different branches widely scattered over the country. First, the manufacturer had to travel on horseback to purchase his raw materials amongst the farmers, or at the great fairs held in those old towns that had formerly been the exclusive markets, or, as they were called, "staples" of wool. The wool, safely received, was handed over to the sorters, who rigorously applied their gauge of required length of staple, and mercilessly chopped up by shears or hatchet what did not reach their standard, as wool fit only for the clothing trade. The long wool then passed into the hands of the combers, and having been brought back by them in the combed state, was again carefully packed, and strapped on the back of the sturdy horse, to be taken into the country to be spun. For this end the West Riding manufacturer had not only to visit the villages in the immediate neighbourhood of Halifax, Bradford, &c., but used periodically to traverse the romantic hills and dales of Craven. Here at each village he had his agents, who received the wool, distributed it amongst the peasantry, and received it back as yarn. The machine employed was still the old one-thread wheel, and in summer weather, on many a village-green and hill-side, might be seen the housewives plying their busy trades, and furnishing to the poet the vision of "Contentment spinning at the cottage door." Returning in safety with his yarn, the manufacturer had now to seek out his weavers, who ultimately delivered to him his camlets, or russets, or serges, or tammies, or calimancoes (such were then the names of the leading fabrics), ready for sale to the merchant or delivery to the dyer. It was in the year 1790 that the first spinning-jenny was put up in Bradford, in the private house of Mr. Garnett, a spinner, whose family still maintain a deserved eminence in the trade. Of course it was worked by hand. About the same period, similar

machinery was introduced into Halifax and the neighbourhood. The first factory erected in Bradford was in 1793, and loud and manifold were the predictions of ruin that accompanied it. The extension of machinery and the improvement of mill-yarn advanced slowly but steadily. From a variety of causes, the manufacturers of Norwich did not avail themselves of the improved processes which the invention of the spinning-frame and the application of steam power brought out; and, consequently, the spinning of worsted yarn passed gradually from Norfolk to Yorkshire; in which latter county such improvements in machinery have subsequently taken place, as have enabled the manufacturer of that district to bring his goods into the market against the rivalry of the whole world.

In the year 1836 a new raw material was brought into use in the Bradford trade, destined speedily to become one of its most important features. The existence of an animal called Alpaca, half camel and half sheep, had long been known to travellers and naturalists, and, indeed, tradition reports that Pizarro had brought back specimens of its wool on his first return from Peru, together with textures made from it by the natives. But up to the period mentioned, this wool, as an article of commerce, had attracted little notice; and to Mr. Titus Salt, of Bradford, belongs the honour of having properly estimated its capabilities, and perfected its adaptation. The animal is of the Llama tribe, and is found only in the mountainous regions of the southern part of Peru, the table-land about four hundred miles from the sea-coast. It cannot live in the low lands near the sea. It is gregarious, but not kept in large flocks like sheep, and requires considerable care. The attempts to naturalise this animal in England have not hitherto been successful. His Royal Highness Prince Albert, with his characteristic patriotism and love of science, has paid much attention to its culture and adaptation to our climate; but his efforts have not realised the result we could have desired. The late earl of Derby's flock, now in the hands of Mr. Salt, are thriving; but still it is doubtful whether the alpaca will ever become a stock animal in this country. The humidity of our climate is generally believed to be the main cause of our failure. Some years ago, six hundred alpacas were shipped from Peru to Liverpool; but so unskilfully had the arrangements been made for their accommodation, that only six survived the voyage. Alarmed at this shipment, the Peruvian government issued an edict, prohibiting their exportation for the future; and when, last year, some enterprising Australian colonists attempted to procure a cargo, they were obliged to return disappointed. The wool, or hair of the alpaca is of various shades of black, white, grey, brown, &c., and is pre-eminently distinguishable for its brightness and lustre, its extreme softness, and great length of staple. A specimen, shown in the Great Exhibition by Messrs. Walter Milligan and Son, of Bingley, was forty-two inches in length; but this must have been of many years' growth. Considerable difficulties were at first experienced in the working-up of this material into yarn, but patience, perseverance, and skill, ultimately overcame them; and at the present time, in combination with warps of cotton or of silk, it forms an amazing variety of articles of great richness, softness, and beauty. The advance in its consumption may be estimated from the fact, that whilst, in the five years from 1836 to 1840, only 560,000 lbs. per annum were imported, last year the import had reached 27,331 ballots, or 2,186,480 lbs. weight: and the advance in price has been from 10*d.* per lb. in 1836, to 2*s.* 6*d.* per lb. in 1852.

Nearly contemporaneous with the introduction of alpaca wool, was the bringing into general use in Yorkshire of an article, similar in many of its properties—mohair, or goat's wool. This article is of very ancient use in manufactures, having been employed, as we are taught in the Book of Exodus, for the furniture and covering of the Jewish Tabernacle. The wool is grown in the neighbourhood of Angora, in the centre of

Asia-Minor, and is brought from thence on the backs of camels to Constantinople for shipment. It is singular that, although many attempts have been made to extend its growth beyond this immediate district, they have hitherto entirely failed. Formerly yarn was spun by hand in Turkey itself to a large extent, and exported to France; but English-spun mohair yarn has now entirely superseded it. The export of this yarn to France in 1850, amounted to 400,000 lbs; and in Germany its consumption is greatly increasing. It is manufactured in Yorkshire, chiefly into articles for ladies' dresses, of great softness, lustre, and brilliancy. It will be readily conceived that the introduction of these new raw materials, added wonderfully to the capabilities of the manufacture, and increased immensely the number and variety of the fabrics produced. In the mean time, great improvements were made in machinery, and the result has been the opening of new branches of industry, and the quadrupling, within thirty years, the number of work-people employed. In the town of Bradford alone, the population has arisen within the last fifty years, from 13,264 to 103,782. The consumption of the various manufactures produced is immense. The total quantity of yarn spun may be estimated at about 57,000,000 lbs., which would require about 100,000,000 lbs. of fleece wool. Among the many advantages of the late Great Exhibition, none was more striking than the opportunity it afforded of studying the comparative capabilities of our own and other countries. Englishmen were taught the useful lesson that we possess no monopoly of inventive genius or practical skill; and that to maintain our position, it is indispensable that we spare no effort, and relax no energy. "I had the honour and pleasure," says an able lecturer, "to serve as vice-chairman of the jury charged with the examination of the goods included under Class XII.; and, along with Mr. George Tetley, of Bradford; Dr. Hermann, of Bavaria, and Mr. Bernonville, of Paris, I inspected the various fabrics produced by our own and the continental worsted manufacturers. The result of this investigation was, on the whole, highly creditable to English industry, whilst, at the same time it afforded useful suggestions for the future. It was curious and interesting to notice some worsted fabrics of great beauty, sent from Russia, a country we have never heretofore regarded in the light of a manufacturing rival.' Amongst these were specimens of a cloth of great softness and fineness of texture, said to be spun and made by hand, from camel's or goat's hair, by the Bashkirs, a wandering and half-savage tribe on the banks of the Caspian Sea:—these were really wonderful, as showing what, after all, with the very simplest and rudest machinery, the human hand is capable of accomplishing."

It appeared to the jury that as to the fabrics composed of wool mixed with cotton, and the alpaca and mohair goods, there were no goods produced on the continent that could at all compete with the English manufactures. The second conclusion was, that whilst there were some Bradford goods of very fine qualities that were, of their particular description, unsurpassed in excellence of manufacture, yet that there were no double-twilled merinos of English manufacture exhibited; and that in these merino fabrics, and other goods designed for the use of the wealthier portion of the community, our French neighbours maintained their pre-eminence. We must not forget to mention, while speaking of French manufactures, some figured or fancy goods from Roubaix, which were of beautiful design and exquisite workmanship. It is, indeed, in the department of design that our English deficiencies are most apparent; and no greater benefit could be rendered to the worsted trade than the introduction of a purer and more cultivated taste, not only among the producers, but also the consumers of our fabrics, by an extension and improvement of our plans of art-instruction; which is mainly to be done by indoctrinating the pupil with the true principles of art, and placing before him specimens illustrative of the right application of these principles to the specialities of his own particular

manufacture. One point more remains to be briefly dealt with. We have seen the various improvements and inventions which, following each other in such quick succession, have brought the worsted trade to its present point of progress and prosperity. There can be no question that these have developed our national resources, and added to our national wealth; but what has been their influence on the great masses of the people employed in the manufacture? We know it may be said that the landowner has been benefited, for his rental has been largely augmented; that the farmer has derived great advantage, for his wool has been increased in quantity as well as raised in price; that the manufacturer himself has attained to wealth and eminence. But what have been their results, economically, socially, and morally, on the toiling thousands dependent on the trade for their daily bread? We have described the processes of manufacture carried on towards the close of the last century, before the introduction of machinery and steam power. There are some persons who affect to look back upon that period with regret, and lament over the loss of domestic comfort, simple manners, and social happiness, which, they say, our manufacturing system has caused. And they delight to draw a glowing picture of the time when, amidst the quiet scenes of nature, far from the smoky town and the clatter of machinery, the spinner and the weaver followed their honest calling in the bosom of their families; not wasted in their physical strength by excessive toil, nor ground down to the dust by the rapacity of tyrannical masters, but earning a comfortable competency by moderate labour; not a turbulent, infidel, and chartist, but a contented, religious, and loyal peasantry.

Such a picture is a fable, not a fact. There can be no question, from all the records and traditions of the trade, that the physical comforts of the artisan have been vastly increased, and his social position greatly elevated. In 1787, the average rate of wages was 3*s.* 3*d.* per week, when a stone of flour, weighing 16 lbs., cost the working man from 3*s.* to 3*s.* 6*d.* At the present time, with flour at 2*s.* per stone, with other articles of provision reduced in proportion, with articles of clothing one-third at least of their former price, the average wages at Bradford of the factory-workers, men, women, and children, is 10*s.* per week. Nor is the amelioration in their social condition less real, although there is still great room for sanitary, for educational, for religious improvement. If there are grasping masters, men ignorant or regardless of their high moral obligations, they are the exception, not the rule. There are many noble "captains of industry,' between whom and their work-people there is some other connexion than a mere money-payment; who study to promote their welfare and elevation, and whose efforts are met by a frank confidence and a grateful recognition. There are thousands of homes in the West Riding, where not only honest labour meets with its due pecuniary reward, but where comfort, cleanliness, and intelligence prevail; homes radiant with happiness, and many of them hallowed by religion. We shall now, with all due acknowledgment, take our leave of the able lecturer from whose discourse we have selected the foregoing remarks, and, in concluding our present chapter, briefly remark that the jury, in testimony of their high approbation of the various specimens offered to their examination, awarded prize medals to no fewer than forty-seven exhibitors of worsted manufacture.

CHAPTER XIV.

GLEANINGS AND REMINISCENCES.

SECURITY OF PROPERTY—AMAZING POPULARITY OF THE EXHIBITION—A ROMANCE IN THE RUSSIAN DEPARTMENT—NOTABILIA—THE COLOSSAL CROSS—THE GREAT COAL—ITALIAN WONDER AND AMERICAN INGENUITY—HOUSE OF CAOUTCHOUC—THE PALETOT-BOAT—THE BRASS TAILOR.

Under this head we shall, from time to time, record such incidental events connected with the brief but glorious existence of the Crystal Palace as may, we hope, prove not altogether uninteresting to our readers. We shall also, without any attempt at classification, occasionally describe such of the more remarkable objects as, in the rich profusion that was everywhere scattered around, may have escaped our earlier attention. Indeed, such was the apparent inexhaustibility of that wondrous collection that, on a retrospective glance, the mind despairs of comprehending it as a whole; but now that the glorious vision has passed, now that the excitement has cooled, and visitors from foreign parts and quiet country places have reached their homes; now that the splendid trophies of human ingenuity and enterprise have returned to their respective owners, and that vast array of wealth and grandeur is dispersed, we begin to faintly realise the magnitude and purpose of the Great Industrial Bazaar. The Exhibition of the Industry of all Nations having finally closed, we are enabled to look on its results as matters of history, and recall the various events of those eventful months with a somewhat calmer and more philosophic spirit. Two reflections arise out of the mass, which, above all the rest, will read the world a great lesson. The first, that thousands of people, gathered from every civilized corner of the earth, speaking different languages, brought up under different modes of government, exercising different forms of religion, and putting faith in different creeds, passed daily through the noble edifice, not only without accident or mischief, but positively without inconvenience to themselves. The people were their own police; and the six millions went, and wondered, and departed in good-will and peace. History records no fact like this. Not less surprising or less suggestive, is the amazing thought that seventeen thousand exhibitors, who, like the visitors, were of almost every nation and kindred under heaven, entrusted the most valuable evidences of their wealth, their skill, their industry, and their enterprise, to the guardianship of some fifty policemen, armed with no better weapon than a wooden baton, and earning wages but little superior to that of the day-labourer. Day after day and night after night passed on, and no added force was requisite for the safety of the almost countless wealth deposited within those fragile walls. One can scarcely comprehend the strength of so much confidence and reliance on the law and order of Great Britain. In no other country of the world could such an exhibition of the industrial arts have taken place. Do we say this boastingly, or of a vain spirit? No; rather let us humble ourselves before the Throne of Mercy, and be thankful that it has been vouchsafed to us in our generation to lead the peoples onward in the march of peaceful enterprises and industrial triumphs.

The exceeding popularity of the Exhibition eventually became its greatest wonder, and many who went there to study the marvels of manufacturing skill could only gaze at the multitudes which they attracted to Hyde-park. There is a magnetic power about large masses gathered in one vast edifice, and swarming in happy excitement along spacious avenues, where their numbers tell upon the eye, which eclipses every other spectacle, however splendid or interesting. Man is superior to the choicest examples of his handiwork, and never were vast assemblages seen in a situation more imposing.

Those who witnessed the aspect of the building on a crowded shilling-day will not readily forget the strange and indescribable sensations with which it inspired them. Who can say that we shall ever be able to witness such a sight again? It is not a small excitement which drags up humble provincials *en masse* from the country—which induced an old woman of eighty-four to travel on foot all the way from the Land's-end—which sent a bushel and a half of watches in one night to the shop of a single pawnbroker in Leeds, and which so stirred the heart of private benevolence throughout the kingdom that even our charity schools and the inmates of our workhouses, were largely represented at this Jubilee of Industry. On the ground, therefore, of popular excitement alone, few of us can expect to see the renewal of such a spectacle. Books may supply us with the fullest information on the subject, but they can never touch the heart or stamp their lessons upon the memory like a personal inspection of this wonderful display. For ourselves we have always felt our powerlessness in dealing with the details of a collection so vast and comprehensive. An Exhibition which embraced every kind of industrial product cannot be grasped within reasonable limits, and a history of it, if attempted, would exhaust the patience of the most indefatigable reader. The bare classification of objects occupies eighteen closely-printed foolscap pages. The power of discussing advantageously each division of that immense classification involves a minute knowledge of every art to which the ingenuity and the labour of mankind have been directed, and is plainly impracticable. For the determination of excellence in each department the public may, however, be most safely and authoritatively referred to the awards and reports of the different juries. There are, notwithstanding, general results which it comes fairly within the province of the historian to point out; particular inventions, to indicate the importance of which justifies a special notice, and lessons of experience for the guidance of our future industrial career which ought not to be lost sight of. Many of these topics have from time to time been touched upon. Others may occasionally suggest themselves; and we shall endeavour to trace out the full significance of the objects that were brought before us, and gather up the threads of interest which the spectacle presented.

A ROMANCE IN THE RUSSIAN DEPARTMENT.

We have some doubts whether the Exhibition was ever so interesting in detail since the 1st of May, as it was within two or three days of the opening. Two days before it opened, the fulfilment of the pledge to the public appeared physically impossible. The place was strewn over with fragments and saw-dust, and boxes and cases, packed and unpacked. Hundreds of fittings had yet to be finished; men were at work all over the counters, and up in the galleries, and on the roof, and over the floor; and there were not twenty yards of the whole area of twenty-six acres that looked in such a state of forwardness, as to justify a hope that they could be got ready in time for the opening. By what magical arts all these difficulties were overcome, the confusion cleared up, the hangings swung, the cases unpacked, the counters dressed, and the vast superficies decorated, and put in order for the ceremonies of the inauguration, we know not; and we are even sceptical as to the fact whether the people who accomplished these sorceries, are quite aware themselves how they did it. The confusion of the last two days was singularly picturesque. You could see the costumes of all nations running about in a state of flutter and disorder, that elicited an infinite variety of temperaments—the flash of the tropics, the languor of the south, the gravity of the oriental complexion, and the rough bluster of the north. Some were impetuous and choleric; whilst others, seated tranquilly on their unopened bales, waiting for instructions, looked on at the surrounding riot with imperturbable indifference. The incidents that were everywhere disclosed to you as you passed up the nave helped, also, to give a sort of dramatic

interest to the scene, and to set you speculating on the distant homes and associations of these people, and the community of pursuits and civilizing aims which had thus collected a multitude of men from the extremest points of the world under one roof, and for one express object. Little domestic under-plots, and quaint bits of pathos and fun, occasionally enlivened the bustle, or threw a scrap of pantomimic comedy into the silent corners of the Bazaar.

We remember an instance of this kind. It was just before the Exhibition opened, whilst most of the foreign departments were in a state of indescribable confusion. The Russian division was in the incipient stage of development; curious drums and trumpets, glittering ware and articles of northern *vertu*, had been delivered out of their boxes, and lay heaped about till the rest of the consignment should have arrived. There was a lull in the work; the men entrusted with the business were out, probably unpacking in the park; and the Russian chamber, in that condition of rich disorder, was left to the charge of a young girl. She was dressed town-fashion, and had none of the marks of the peasant about her, except a bright glow on her cheeks. She was handsome —that is to say, round-faced, with lively eyes, capable of a profound sentimental expression, (which seems, indeed, more or less common to all lively eyes,) and of a "comely shape." You would have almost guessed her country from the cast of her features; yet, notwithstanding the Russian snow she came of, she gave you to understand at the first glance, that there was blood in her veins as warm as ever danced in Italy. If one could make anything substantial out of such a fancy, we might have imagined that she was a neighbour of that river, "whose icy current flows through banks of roses." There she stood, keeping watch over the goods, and pretending to read a book. It was a mere pretence. From behind a temporary curtain suspended at the back, there peeped every now and then an English youth of one or two-and-twenty, with a dash of the juvenile *roué* in him, extremely well-looking, and fairly set out for conquest. He appeared to be connected with some of the adjoining states, but it was evident that while his business called him to one place, his love of adventure had fascinated him to another. The coquetry that went on between them, would have had a telling effect upon the stage. Young as they were, they understood how to flirt books and curtains as skilfully as any senhorita of Seville or Madrid ever flirted a fan. Her look aside, to show her consciousness, as it were unconsciously, was perfect; and the way the young gentleman affected to be looking very seriously at something else, while he was all the time directing an intense focal light upon her ringlets (which she felt as palpably as if it had lifted them up), was a picture which, with the lady in the foreground, might be recommended to the consideration of Mr. Frank Stone, who always hits off these exquisite inchoate sensations with the most charming truthfulness. They did not understand one word of each other's language, yet had already contrived, by the aid of a third language, with which they were both familiar, to get up a tolerably intimate acquaintance. We are sorry we cannot tell our readers how it ended; we hope happily for both parties, and that the lady did not leave her own inclement climate to find a more wintry region here! When the Romances of the Exhibition—with the Crystal Fountain for a frontispiece, as the trysting-place for lovers who wished to lose other people and find themselves—come to be published, perhaps we shall have the sequel of this little incident.

NOTABILIA.

Lord Brougham and the Great Exhibition.—This learned lord, who was opposed to the erection of the Crystal Palace, became at length persuaded of its usefulness. In presenting Mr. Paxton's petition to the Lords, he said:—"He had the honour of presiding

over the Society for the Diffusion of Useful Knowledge, and it was the intention of the society to present a petition in favour of this ally for the diffusion of knowledge. They considered it a serious rival to their adversary, the *gin palace*, because it would draw the people towards that which, whilst it entertained, also instructed, and must improve. He understood that two million and a quarter of persons had already visited the Crystal Palace, not more than one-fourth of whom had come from the country; and he could not help saying that, instead of seeing £2,500 a-day taken in shillings, he would rather see £200 received in pence.

Educational Adaptation of the Exhibition.—The proposition to make the Exhibition a means of popular education, by explanations and descriptive lectures, &c., was most favourably received, and the University of Oxford not only countenanced the scheme, but gave a series of lectures, in accordance with the idea in preparation for the general visit of the members of the University to the Exhibition. Professor Ansted announced a series of eight lectures on successive Friday and Saturday mornings, between the hours of nine and twelve o'clock, in explanation of the mining processes, mineral products, and manufactures forwarded for exhibition from various parts of the world. The first of these lectures took place on Friday, the 23rd of May, and was of an introductory character—treating of the general nature of the materials of which the earth is composed. He then discussed, in their order, mineral fuel, iron, other metals, stone, clay, various earthy minerals and gems. The number of his class was limited, and a detailed list of the objects illustrated was issued previous to each lecture. Lord Dufferin suggested that a number of the pupils of the Belfast School of Design should be sent to London to have the benefit of seeing the Great Exhibition. His lordship headed a list of subscriptions for the purpose with a contribution of £30.

The Exhibition Post-Office.—A "post" was erected in the centre of the south half of the transept, after the fashion of such as are used in Belgium. It was a hollow cylinder (tastefully decorated, and in imitation of bronze), with a mouth similar to that of a common letter-box in this country; the post times being inscribed upon a ticket inserted in the top of the "post." It was, we understand, intended to adapt this to the uses of the Exhibition establishment, which, we may here mention, included a post-office department, the business of which was very extensive, and was conducted by Mr. Osmond Jones. In this office, on an average, about 500 letters were dispatched daily, and about 300 arrived. Letters sent out were registered; and letters received were distributed to all the various parties engaged in the vast edifice. Posts arrived and left thrice a day—eleven, three and five. The Postmaster-general sent direct for the letter-bags, which did not pass through any branch office; and great acommodation was thus afforded to the public.

A graceful act of liberality on the part of his Royal Highness Prince Albert towards the young ladies, pupils at the Government School of Design, Somerset-house, is worthy of record. A few days before the opening of the Great Exhibition, the senior female students, (several of whom were exhibitors,) prepared a memorial to Prince Albert, praying that they might be present at the inauguration of the "world's fair" by her Majesty. The prince immediately replied to Mrs. M'Ian, the principal of the female branch of the school, regretting his inability to grant the free admissions required, but requested that the young ladies would accept a dozen season tickets, and that she would be pleased to present them to twelve of her most deserving pupils. Shortly after this communication from the prince, Mr. Redgrave, the principal of the male department, received from the Earl of Granville the following note:—"Bruton-street, April 29. Mr. Labouchere and I have much pleasure in offering twelve season tickets to the Government School of Design, if you will, with the other head-masters, select those students who

appear to you the most deserving. It will give *us* pleasure if these tickets give pleasure and instruction to those to whom you may allot them."

Purchases at the Great Exhibition.—Her Majesty among other acquisitions, purchased at the Exhibition a tiara of sapphires of great lustre and size, and a brooch, consisting of two enormous rubies, set round with diamonds, by Lemonnicre, of Paris. At a meeting of the Goldsmiths' Company, a resolution was unanimously passed that the sum of £5,000 should be expended in the purchase of some of the magnificent plate exhibited at the Crystal Palace, for the use of the splendid hall. At a court of common council, Alderman Copeland brought forward a motion, "that a sum not exceeding £5,000 be voted from the city cash to purchase some of the works of art in the Exhibition of the Industry of all Nations, adapted for the decoration of the city of London."

A Commemorative Monument.—We extract the following from the columns of a popular journal.—(*To the Editor of the Daily News.*) Sir,—Your excellent article on the Exhibition in last Friday's paper has given much satisfaction to a large body of exhibitors, and all concur in the desirability of erecting a monument in commemoration, as suggested by you. Will you allow me to suggest another plan of doing this, viz., to purchase the Crystal Fountain—erect over it a temple, and let this be the memorial to coming ages, that on the spot occupied by it, thousands met each other "by appointment," during the great days of the Exhibition; and that it was not only the centre of attraction to many pilgrims who visited the building from afar, but the centre of the building itself. The commissioners might do a worse thing with a portion of their surplus fund than this, and their famous names might be engraved on brass within the portals of the temple itself. An inscription also should be placed there, showing how far east, west, north, and south the building extended from the centre, so that visitors might measure with their "mind's eye" the grand proportions of the Palace of Glass.—I am, Sir, your obedient servant,

Crystal Palace, October 13. A Lucky Exhibitor.

THE COLOSSAL CROSS OF THE GREAT EXHIBITION.

The public must remember the colossal cross, made of granite, which stood close to one of the entrances to the Great Exhibition, 1851. This immense piece of workmanship, which was hewn out of a solid block, and weighed upwards of ten tons, was brought over from Sweden, by an eminent merchant, named Carl August Kullgreu, who, falling sick and dying during the Exhibition, directed the cross to be placed over his remains, in the burial-ground of the Swedish church, Prince's-square, Ratcliffe Highway, which was accordingly done, and it there found its last resting-place. Its carriage from Hyde Park to its present site, cost £25. On the base is the following simple inscription —"Carl August Kullgreu, born at Sweden in 1793, and died in London, 1851."

THE GREAT COAL AT THE EXHIBITION.

This large block of coal was drawn out of one of the pits in the Hange Colliery, Tividale, near Tipton, belonging to Mr. Daniel George Round. Upon the first attempt being made, such was the great weight of the coal that the niche ring upon which the rope is wound broke through in two places, it being cast iron, six inches broad and one inch thick. A new niche ring being put on, a second attempt was made, when, amidst great suspense, the coal was brought to light, up a shaft 200 yards deep, in the space of three minutes. The waggons being run over the pit the coal was landed amidst the shouts and cheers of all assembled. The coal was then transmitted, by an inclined railway, about 300 yards, to the wharf, the colliers holding it back by ropes. It had to be brought to the bottom of the pit some considerable distance; the ponderous mass at

times breaking the cast-iron rails and sleepers forming the railroad, as it moved slowly along. The weight of the coal itself, exclusive of any chains, &c., is about five tons, ascertained by means of steelyards. When lifted to be weighed, the hook by which the coal was suspended broke through, being of wrought iron, 1¼ inch square. The size is 6 feet high and 18 feet in circumference, necessarily of a circular shape to admit it up the pit shaft; the largest size that could possibly be produced, and probably the greatest weight ever attempted to be drawn out of a mine, and must have been attended with great risk to the machinery and ropes. No other than the thirty-feet or thick coal seam of South Staffordshire could allow of such a large piece of coal being produced. Its height, upon the skip and waggon, is nearly nine feet. It is a fine coal, remarkably bright and clear. It formed a very interesting addition to the Great Exhibition, and attracted great curiosity. It is worthy of remark, that the services of the men were gratuitous in getting the coal and sending it from the mine to the wharf, thus showing the good feeling existing between Mr. Round and his workmen.

ITALIAN WONDER AT AMERICAN INGENUITY.

We translate the following amusing notice from the *Giornale di Roma*, the daily oracle of the eternal city:—Let us, says the astonished writer of this article, take a brief survey of American eccentricities in the Crystal Palace. First of all cast your eyes upon that case—it is no larger than an ordinary portmanteau—open it, and you will find therein an entire house of *caoutchouc*, which you may erect, wherever your roving fancy may lead you, upon a very slight foundation, which folds up into the smallest possible compass, no bigger than an umbrella. All necessary furniture for the establishment is packed in the same case—to wit, an excellent elastic mattrass which you may *blow up* at pleasure; small packets also, which with *a breath* you may convert into most commodious cushions. Is the evening fine and starlight—take that long band—it may be easily inflated into a luxurious sofa, upon which yourself and your whole family may sit at ease. In the course of your peregrinations, do you suddenly encounter a broad river, whose waters bar your further progress? You may navigate the stream: lay hold of that *paletot*—you never met with its equal before—it is no bigger than an ordinary *Mackintosh*—you would take it to be one—you may see one like it every day in Hyde Park, or in the Champs Elysée; no dandy appears without one. But feel in one of the pockets, you will find therein a small pair of bellows; apply the tube to a little opening, and suddenly your *paletot* swells out, changes its shape, and in a trice is transmogrified, to all intents and purposes, into an excellent, serviceable boat. A couple of oars lie hidden at the bottom of the wonderful case—you embark, seating yourself upon the same serviceable case, in which your house is contained—you pass the river, and your canoe resumes its original form. According to the temperature of the atmosphere it either remains on your shoulders, or disappears into its hiding place;—from the *container* becoming the *contained.*

A little further on, you stop before a small brass machine, about the size of a quart bottle; you fancy it is a meat-roaster: not at all. Ha! ha! It is a tailor! Yes, a veritable *stitcher.* Present a piece of cloth to it: suddenly it becomes agitated, it twists about, screams audibly—a pair of scissors are projected forth—the cloth is cut; a needle sets to work, and lo and behold, the process of sewing goes on with a feverish activity, and before you have taken three steps, a pair of *inexpressibles* are thrown down at your feet, and the impatient machine, all fretting and fuming, seems to expect a second piece of cloth at your hands. Take care, however, as you pass along, that this most industrious of all possible machines does not lay hold of your cloak or great coat; if it touches even the hem of the garment, it is enough—it is appropriated, the scissors are whipped out, and with its accustomed intelligence the machine sets to work, and in a twinkling

another pair is produced of that article of attire, for which the English have as yet been able to discover no name in their most comprehensive vocabulary. See now, how, with this wonderful case and this most extraordinary machine, a man may travel far and wide without the aid of his fellows. Add only to this small quantity of luggage one of those steam ploughs lately invented by the English, with which six shares are readily set to work, and you may plough your field up in a jiffy. Is it not astonishing, to travel, sleep, be clothed and fed without apparent assistance from human hands?

CHAPTER XV.

PRINTING FOR THE BLIND, FROM THE JURIES' REPORT.

INVENTED IN FRANCE—M. HAUY—M. GUILLIE.—M. DUFAU.—INSTITUTION AT VIENNA.—MR. GALL, OF EDINBURGH.—REV. MR. TAYLOR, OF YORK.—DR. HOWE, OF THE UNITED STATES.—PROGRESS OF THE DISCOVERY IN VARIOUS COUNTRIES.—STEREOTYPE OF THE HOLY SCRIPTURES.

The jury have noticed with pleasure the large number of exhibitors from England, France, the Zollverein, and the United States, of inventions and devices for the instruction of the blind. It has been estimated that, in the European countries, one person out of every 1,200 or 1,400 of the entire population is blind, and in America, one in every 2,000. The great and increasing attention that is paid to the intellectual and moral instruction of this unfortunate class is one of the distinctive features of the progress of our age. A few years ago, printing for the blind was considered only a curious or doubtful experiment; but it is now established beyond all question that books are true sources of profit and pleasure to them. Whilst embossed books have recently very rapidly increased, it is delightful to notice that the blind readers have multiplied far more rapidly. These circumstances have induced the jury to attempt a brief historical sketch of the origin and progress of printing for the blind, together with the present state of the art.

The invention of printing for the blind marks a new era in the history of literature. The whole credit of this invention, so simple, yet so marvellous in its results, belongs to France. It was M. Valentine Haüy, who, in 1784, at Paris, produced the first book printed with letters in relief, and soon after proved to the world that children might easily be taught to read with their fingers. It has been said by his biographer that he took his idea of embossed typography from seeing that Mademoiselle Parodis, a blind pianist of Vienna, who visited Paris that year, distinguished the keys of her instrument by the sense of touch, and also rapidly comprehended the maps in relief, which, a short time before, had been invented by M. Weisembourg, of Mannheim. After employing letters of different forms and sizes, and experimenting with the blind as to the precise shape of the letter that could be the most readily distinguished by the touch, he at length fixed upon a character differing very slightly from the ordinary Roman letter, or perhaps a little approaching italics. There was the usual mixture of the upper and lower case, the capitals taking more of the script form than the small letters. He submitted his first efforts and experiments to the Academy of Sciences of Paris. A committee was appointed to examine them, consisting of the Duc de la Rochefoucauld, M. Desmarets, M. Demours,

and M. Vicq-d'Azir, and their favourable report on the 18th February, 1785, rendered his success a triumph. Great *éclat* attended the public announcement of this invention. A new institution was established, called the Institution Royale des Jeunes Aveugles, and M. Haüy was placed at the head of it. Among the books which he embossed were a grammar, a catechism, small portions of the church service, and also several pieces of music. The printing of the music was inferior. The abbreviations which he introduced into his grammar, it has been said, did not afford sufficient advantages to counterbalance their inconvenience. His principal work is entitled *Exposé de differends moyens verifiés par l'expérience pour les mettre en état de lire à l'aide du tact, d'imprimer des livres dans lesquels ils puissent prendre des connaissances de langues, d'histoire, de géographie, de musique, etc.; d'exécuter différends travaux relatifs aux métiers.* Imprimé par les Enfants Aveugles. Paris, 1786, 4to. This celebrated essay was translated into English by Dr. Blacklock, the blind poet; and, in 1793, was published in London with his poems, in quarto. On the 26th of December, 1786, twenty-four of M. Haüy's pupils exhibited their attainments in reading, writing, arithmetic, music, and geography, before the king and the royal family at Versailles, who were delighted with the wonderful results. For a while all went on prosperously, but M. Haüy's friends soon began to give him credit for zeal rather than discretion in the management of his Institution, and consequently, as the novelty wore away, their admiration cooled, the funds fell off, and the institution languished until it was put upon a government foundation. The blind really received but little advantage from an invention that at first promised so much. The fault, however, seems to have been, not so much in the plan as in the execution of it. The books were bulky and expensive, and the letters, though beautiful to the eye, and clearly embossed, wanted that sharpness and permanence so essential to perfect tangibility; besides that, though the letters filled three spaces, they were too small to be well adapted to the sense of touch. Large editions of the few books printed were published, the idea having taken a strong hold of the public mind; so that, though the evil was soon perceived, it was not easy to abandon the defective alphabet and assume a better, for that step involved the sacrifice of all the previous labour. Hence this noble invention, except, perhaps, within the walls of the institution, soon sank into oblivion, and very little more was heard of it until 1814, when Haüy, having fallen into disrepute, was pensioned off on 2,000 francs a year, and Dr. Guillié, an active and enterprising gentleman, was made *Directeur-Général* in his place. Dr. Guillié soon revived the printing, and having considerably modified the letters, commenced the publication of a series of elementary and other works.

The mechanical execution of these volumes was exceedingly heavy. Most of them were ponderous folios, and very expensive; still they formed, for many years, almost the only literature of the blind, not alone in France, but in other countries. We should not omit particularly to mention the following book, which has come under our notice: *Notice Historique sur l'Instruction des Jeunes Aveugles.* Par M. Guillié, directeur-general de l'Institution Royale des Jeunes Aveugles de Paris. Paris, Imprimé par les Jeunes Aveugles, 1819, 4to, fifty-two pages, with seventeen lines to a page. Two leaves are pasted together, so that it is read as if embossed on both sides of a sheet. This is the second edition, the first having been embossed in 1817, the third in 1820, and a fourth edition, enlarged, in 1821. On page fifty-two is a curious specimen of printing in relief, in colour, so as to render the letters more easily read by the eye. This book was a valuable contribution to the library of the blind, but still retains nearly all the objections that were made to Haüy's first books; it can only be read by those possessing a very delicate touch. It is replete with information respecting the means then employed for the instruction of the blind in Paris; it proves, however, that the art

of embossed typography had made but very little progress. It is singular that in this book no mention is made of the author's predecessor, Haüy, to whom, we should not forget, the idea of finger-reading is due. Between the years 1821 and 1840 very little printing was done by this institution, except religious books, and music, after the system of notation by letters and ciphers. L'Institut des Jeunes Aveugles de Paris, since its foundation in 1784, has at times been in a deplorable condition, but, about the year 1840, it underwent a thorough reorganisation, and is now, under the able management of M. Dufau, justly entitled to the front rank of institutions of this class in Europe, from its usefulness, no less than its age. A radical reform in the printing department has been made: M. Dufau has devised a system of types consisting of capitals and lower-case Roman letters, and has greatly improved the character of the embossing. The French books are now well embossed, sharp, clear, and durable. They have also been so much reduced in bulk that they are offered at a moderate price. M. Dufau has proposed to print a standard library for the blind, to consist of ten volumes in quarto, for elementary instruction, and ten volumes for higher instruction. The first series is nearly completed. The second series of this library, not yet printed, it is to be hoped will soon follow. For the above lists, and other interesting information respecting the Paris typography for the blind, the jury is much indebted to a valuable pamphlet published by M. J. Guadet, entitled *L'Institut des Jeunes Aveugles de Paris, son Histoire et ses Procédés d'Enseignement*, Paris, 1850, 8vo, pp. 115. At Vienna an institution for the blind was established in 1804, but the jury is not aware of any printing having been executed in Austria before the year 1830 or 1831. About this date, the intelligent publishers, Treusinsky, of Vienna, embossed sheets with the Lord's Prayer in various languages, in Roman letters, and afterwards printed works for elementary instruction. The subject has been recently taken up by the imperial printing-office, and several volumes have been published, but the jury are unable to give a bibliographical description of them. In 1806, M. Haüy was invited to establish institutions for the blind at Berlin and St. Petersburgh. His system of instruction was adopted in each of these institutions, and the books used were, for a considerable time, supplied from the press of Paris. Both of these institutions, in a pecuniary point of view, were unsuccessful to M. Haüy, and, in 1808, he returned to Paris, and for a while resided in quiet with his brother, the celebrated Abbé Haüy. The jury have not been able to trace the progress of the printing for the blind at Berlin or St. Petersburgh, but they learn that the amount of matter embossed in Germany, until very recently, did not exceed half of the New Testament. It was in Great Britain and in the United States that the first improvements were made in embossed typography; and only within the last fifteen years, that the blind generally have derived any considerable advantages from books. Before 1826, when Mr. James Gall, of Edinburgh, first began to turn his attention to the intellectual and moral education of the blind, it is believed that not a single blind person in any public institution of this country or America could read by means of embossed characters. To Mr. Gall is due the credit of reviving this art. With the most commendable zeal, patience, and perseverance, he canvassed the form of every letter, until at length he adopted his angular alphabet. He seems, from his own *Historical Sketch of the Origin and Progress of the Literature of the Blind*, Edinburgh, 1834, 8vo, pp. 388, to have experimented long and patiently with a great variety of arbitrary and Roman alphabets, with a view of finding one sufficiently simple and tangible for finger reading. On the 28th of September, 1827, he published *A First Book for teaching the Art of Reading to the Blind;* with a short statement of the principles of the art of printing as here applied to the sense of touch. Edinburgh, published by James Gall. This is believed to be the first book printed for the blind in the English language. It is a small oblong octavo

volume, of nine pages, price sixpence, with four preliminary leaves, in which the author sets forth his "principles." The embossing is in high relief; and though it presents rather a rude appearance from the fact of its having been printed from wooden types, yet it soon rendered the practicability of reading by the blind a matter of experience in Great Britain. Mr. Gall then issued sheets printed by metallic type, which were easily read by the pupils in the asylum at Edinburgh. Encouraged by his success, in March, 1828, he issued his prospectus for the publication, by subscription, of the gospel by St. John, but it was not until about the middle of 1829 that he perfected his alphabet to his own satisfaction. He tried three different founts of type—first, the double English size; second, the double pica; and, third, the great primer; and, after printing and cancelling sheets in each of these three founts, he at length, in January, 1832, finished the printing of his great work. The blind must ever feel indebted to Mr. Gall for the zeal and honest endeavour which he displayed in accomplishing what he thought would most benefit this unfortunate class. Notwithstanding the last sheet of his work was printed in January, 1832, yet it was not till October, 1834, that he was enabled to publish it. It is entitled *The Gospel by St. John, for the Blind:* with an Introduction, containing some Historical Notices regarding the Origin of a tangible Literature for their Use. By James Gall. Edinburgh: James Gall, 24, Niddry-street. 1834. In 4to. The introduction, in common type, comprises eighteen pages. The text, in embossed characters, consists of 141 pages, with twenty-seven lines on a page of seventy square inches. The leaves are not pasted together. The subscription price of the volume was one guinea, but it was subsequently sold for six shillings. Gall was very sanguine of the entire success of his noble enterprise; and, probably, had he chosen a less angular character, and one a little more resembling our common alphabet, as he has since done, he would soon have seen his books used in every institution in the country. His alphabet was the chief objection raised to his system. His printing was clear, sharp, and permanent; and his books, in every respect, were a great improvement on Haüy's and Guillié's. He published five or six other little elementary books in 1834, at the time he issued his chief work; but his system seems not to have come into extensive use. It is to Mr. Gall, perhaps, more than to any other man, that the interest in the education of the blind was awakened throughout Great Britain and America. Nor has he allowed his exertions to flag. In 1837 he published *The Epistle of Paul the Apostle to the Ephesians*, printed for the Blind, in the largest type. The shape of the characters is similar to that in which the *Gospel of St. John* was printed, but instead of being smooth the letters are fretted or serrated. It is a small octavo volume of seventy-two pages, seventeen lines to a page; 250 copies were printed at the price of 1*s.* 6*d.* It is printed in the lower-case letters without capitals. *The Epistle to the Philippians* was also printed, in octavo, price 1*s.* 6*d.* The following year he again modified and improved his alphabet by bringing it back to a still greater resemblance to the common alphabet; but, unfortunately, he yielded to the suggestion of the Society of Arts of Edinburgh by introducing the use of capital letters at the beginning of sentences and proper names. His next book was *The Gospel according to St. Luke*, printed in the common alphabet, for the use of the blind, and capable of being read by any blind person, 1838. Printed for the British and Foreign Bible Society, London. Printed by James Gall, 22, Niddry-street, Edinburgh. This is a well-printed volume of 158 pages, twenty-eight lines on a page of seventy square inches: price 5*s.* The same year the *Acts of the Apostles* was printed in the same serrated letter, in 150 pages, price 5*s.* Besides these books, Mr. Gall printed a series of tracts for the blind, for the London Tract Society, in 1837, price 6*d.* each. It is a matter of surprise that these excellent and well-printed books of Mr. Gall are not more generally used. With the exception of the school at Abbey Hill,

near Edinburgh, it is believed they are adopted by no public institution in Great Britain. It is still a question if the roughness of the serrated character possesses any advantage over the smooth, sharp embossing. Old and used books are frequently preferred by the blind to new and fresh ones.

While Mr. Gall was thus engaged at Edinburgh, the Rev. Mr. Taylor, of York, displayed an intelligent and active interest in the education of the blind. In 1828 he published the *Diagrams of Euclid's Elements of Geometry*, in embossed or tangible form, in 8vo. This was done on Bristol board, but was found too expensive. His mode of embossing, we believe, was forcing the paper, by means of heavy pressure, into the deep cut lines of a copper-plate. It was not successful. He published also a map of England and Wales. In 1836, he printed in raised characters *Selections of Psalm Tunes and Chants*, in oblong 4to. Also a short history of Elijah the Prophet, and of Naaman the Syrian; and the History of Joseph. The efforts of Mr. Alexander Hay, in the cause of embossed typography, deserve mention, although an entire failure. He devised an alphabet of twenty-six arbitrary characters, which, by certain combinations, could represent the abbreviations and double letters; so that in all he had fifty-eight characters. He procured types and other printing apparatus, and in 1828 or 1829, issued a prospectus for publishing the *Gospel of St. Matthew*, at *7s. 6d.* The book was never published. The public interest in the blind became so great, that in 1832 the Society of Arts of Edinburgh offered a gold medal of the value of £20, "for the best communication of a method of printing for the blind;" and the result was, that between the 9th of January, 1832, and the 25th of February, 1835, no less than nineteen different alphabets were submitted, of which sixteen were in a purely arbitrary character. The grand problem was to produce an alphabet that would unite cheapness and legibility. While the puzzling question of an alphabet best adapted both to the fingers of the blind and the eyes of their friends was under warm discussion on this side of the Atlantic, Dr. Howe was developing his system at Boston, in the United States. In 1833, the Perkins' Institution for the Blind was established at Boston, and Dr. S. G. Howe, a gentleman distinguished through a long series of years for his philanthropic labours, was placed at its head. As Gall had done, Dr. Howe took Haüy's invention as the basis of his system, and soon made those improvements and modifications which has rendered the Boston press so famous. He adopted the common Roman letter of the lower-case. His first aim was to compress the letter into a comparatively compact and cheap form. This he accomplished by cutting off all the flourishes and points about the letters, and reducing them to the minimum size and elevation which could be distinguished by the generality of the blind. He so managed the letters that they occupied but little more than one space and a half instead of three. A few of the circular letters were modified into angular shapes, yet preserving the original forms sufficiently to be easily read by all. So great was this reduction, that the entire New Testament, which, according to Haüy's type, would have filled nine volumes, and cost £20, could be printed in two volumes for 16*s*. Early in the summer of 1834 he published the *Acts of the Apostles*. Indeed, such rapid progress did he make in his enterprise, that by the end of 1835 he printed in relief the whole of the New Testament, for the first time in any language, in four handsome small quarto volumes, comprising 624 pages, for four dollars. These were published altogether in 1836. The alphabet thus contrived by Dr. Howe, in 1833, it appears, has never since been changed. It was immediately adopted, and subsequently became extensively and almost exclusively used by the seven principal public institutions throughout the country. It is now the only system taught or tolerated in the United States, and deserves only to be better known in Great Britain and elsewhere, to be appreciated. In America, seventeen of the states have made provision for the education of their blind; and as universal

education is the policy of the country, as well as its proudest boast, these books for the blind soon became in great demand. Dr. Howe, some time since, proposed a library for the blind; and, with a view of increasing the number of books as rapidly as possible, arrangements have been made between the several institutions and presses to exchange books with each other, and not to print any work already belonging to the library of the blind. This harmony of action, together with the uniformity of the typography, presents so many obvious advantages, that the jury cannot but wish a similar system was pursued by the institutions of Great Britain and the continent of Europe.

It appears that, exclusive of three volumes not fully described in the list, 7,903 pages, containing on an average seventy-seven square inches, have been printed at the press of the Perkins Institution, or more than twelve times the quantity of matter contained in the New Testament. Almost all the books are stereotyped, and small editions are struck off as they are required. They are sold at the actual cost, the cost of the larger works being averaged on an edition of 250 copies. The above prices include the binding; fifty per cent. discount is allowed for books sold in sheets. The books are embossed in the institution under the superintendence of Dr. Howe himself, by means of a powerful press, built for the purpose. The sale of books in 1851 amounted to 427 dollars. This, however, is exclusive of the Scriptures. The American Bible Society, which now uses the stereotype plates of the Bible described above, distributed last year 149 volumes of the Bible. In short, the Boston books possess a neatness, clearness, sharpness, and durability of impression peculiar to themselves. The seventh volume of the *Cyclopædia* is already printed, and the jury learn with pleasure that the printing of the remaining volumes will be resumed and probably be finished in twenty volumes very soon. Want of funds is the temporary and only obstacle. About the time that the Perkins Institution was established at Boston, another was set up in Philadelphia. A meeting of benevolent persons was called on the 21st of January, 1833, when arrangements were made to open a school for the instruction of the blind, and Mr. J. R. Friedlander was placed at its head. This school became the Philadelphia Institution for the Blind, by act of incorporation, 27th of January, 1834. The blind owe much to Mr. Friedlander for the Philadelphia contributions to their literature. On the 21st of November, 1833, he held the first public examination, and astonished the public by the progress of his pupils in reading, writing, geography, music, &c. The pupils read fluently from tangible letters executed by themselves with *pin types*. These were small pieces of wood about two inches long, having a letter cut in relief on one end, and the same letter formed at the other by steel points. Maps of the world and of the United States were also exhibited, made by perforating the outline from behind. The result of this exhibition was highly satisfactory. In his address, Mr. Friedlander set forth the great advantages that would accrue to the blind by a general system of instruction. He repeated the usual unanswerable arguments against the adoption of arbitrary characters, and stenographic or phonetic systems, and strongly recommended the use of our own alphabet. He followed, generally, Haüy's plan of instruction. Early in 1833, Jacob Snider, a young gentleman, a native of Philadelphia, applied his mind to the contrivance of a method of printing in relief. The alphabet at first adopted was a mixture of the upper and lower-case italics, and the relief was produced by heavy pressure on thick paper, between two sheets of copper, having the letters deeply cut. The embossing was thus on both sides. His first attempt, after printing a few elementary sheets, was on the Gospel of St. Mark, which he completed by the end of 1833, in a large quarto volume, and published early in January, 1834. An account of his first American book for the blind may be found in Poulson's *American Daily Advertiser* of the 10th of January, 1834. The four gospels were soon after printed in Roman capitals, but being found too bulky and otherwise objectionable they were aban-

doned, and a smaller, more compact, and sharper type, in the Roman capitals, was adopted.

It appears that the Boston and Philadelphia institutions were founded almost simultaneously, and that their presses and system of typography were established without being apprised of the efforts of each other. Time, however, has at length remedied this diversity. The typography of the Philadelphia books is exceedingly well executed, and compares most favourably with the best of the Glasgow books; but the press has ceased to work, and printing in capital letters will not probably be resumed. From the preference which the present distinguished and intelligent director of the Philadelphia Institution, Mr. William Chapin, late superintendent of the Ohio Institution, is known to entertain for the Boston system of typography, we may reasonably hope that, when printing shall be resumed there, it will be with Howe's alphabet. It is the opinion, however, of Mr. Chapin, that all the American institutions should unite, not only in the use of the same alphabet, but that they should all contribute to support one press. It may be remarked here, that the pupils in all the American institutions read fluently in both the upper and lower-case letters, but it is presumed that Philadelphia and Glasgow books will soon be entirely abandoned there; and, as the Boston books can now be obtained in London at a price cheaper than any of the five different systems of books printed in Great Britain, it is to be hoped that they will come into general use here. If it be thought that the letters are too small for adults to read with ease, books may be printed with larger types, and even then be less bulky and expensive than any of the systems in arbitrary characters now in use. In the year 1848 or 1849, the Virginia Institution set up a press, and has since printed several elementary and school books. The Boston type is adopted, with the exception that capitals are used at the beginning of sentences and proper names. This alteration, in the opinion of the jury, is not an improvement, as the blind are thus compelled to learn two alphabets instead of one. The Virginia books are well embossed, and it is hoped that in future books capitals will be omitted. To the American Bible Society at New York much praise is due for their commendable efforts in the circulation of the Scriptures among the blind. The stereotype plates of the Bible in six volumes, executed at the Boston press, under the superintendence of Dr. Howe, now belong to this society. They have printed a second edition from the same plates, and annually distribute, gratuitously, from 100 to 300 volumes. It had ceased to be a matter of surprise in the United States that the blind could read, before the public attention was loudly called to the subject in Great Britain; for we see that, in 1836, there were two active printing establishments for the blind in the United States; by one, the whole of the New Testament had been published in a cheap form, in the common lower-case letters; and by the other the four Gospels in Roman capitals. Let us now return to the Society of Arts of Edinburgh, and their prize medal, to which we have already referred. It was not until the 31st of May, 1837, that the society's medal was awarded. In 1836, when the nineteen different alphabets were before the committee of the society, circulars were drawn up and distributed, with specimens of the several alphabets, to the various institutions for the blind in England and Scotland, and every means employed to arrive at a correct result. The opinions of Mr. Taylor, of York, and Mr. Alston, of Glasgow, seem to have been those which the society chiefly followed. They were in favour of the common Roman capital letter, merely deprived of the seruphs, or small strokes at their extremities, and, accordingly, the prize was awarded to Dr. Fry, of London; and on the 31st of May, 1837, a medal was granted to him for the invention of an alphabet which appears to have been in use, since 1833, in Philadelphia.

On receiving the society's circular, in 1836, submitting the forms of all the competing alphabets to him, Mr. Alston was struck with the simplicity of Fry's, and immediately

conceived the idea of making such alterations as he thought necessary, and putting it to the test. The changes made were simply to reduce the size of the letters and render the faces thinner. On the 26th of October, 1836, he exhibited his first specimen of printing in relief in the Roman capital letter at a public examination of the blind. It was Fry's alphabet, slightly changed to improve the sharpness of the embossing. He then made a successful appeal for a printing fund. After great exertions and most commendable perseverance, he procured a printing press, with two founts of type, and the other necessary printing apparatus. In January, 1837, he issued a few elementary works. By March, 1838, he had made such progress, that the whole of the New Testament was printed in four super-royal quarto volumes; the type is great primer; and there are, in the four volumes, 623 leaves, of forty-two lines to a page. In December, 1840, Mr. Alston completed the printing of the Old Testament in fifteen super-royal quarto volumes, in double pica type. Of nine of the volumes he printed 200, and of the remaining six, 250 copies. There are in all these fifteen volumes, 2,505 pages, with thirty-seven lines on a page. Mr. Alston was justly proud of his great work, the entire Bible, containing the Old and New Testaments, in nineteen volumes. In his *Statement of the Education, Employment, and Internal Arrangements adopted at the Asylum for the Blind, Glasgow; with a short Account of its Founder, &c.*, tenth edition, 1846, 8vo, p. 80, he says, "this is the first bible ever printed for the blind;" but in this he was evidently in error, as we have shown that the greater part of it had long before been printed in Boston. We allude to these facts, merely because it seems a matter of much regret that Mr. Alston should have devoted so much enterprise and money in producing the Scriptures, when he might have ascertained that they had already been printed, and could have been bought at less money than it would cost him to print them. The main difference between the Glasgow and the Boston alphabets is, that one is in the upper and the other is in the lower case, which difference is certainly not of sufficient consequence to demand two editions. Had he expended the same energy and money in producing other valuable works, and exchanged them with the Boston and Philadelphia Institutions, as he was urged to do, the three institutions would have been greatly benefited by the large outlay, and the blind of both countries would have had a great increase to their library. On the 18th of January, 1838, the officers of the Philadelphia Institution wrote to Mr. Alston, informing him that they possessed a printing press, and "understanding that you adopt the same character, it appears to our board of management that both institutions would gain by an interchange of volumes." Mr. Alston at once acceded to this proposition, and immediately shipped 150 volumes, being ten full sets of the New Testament, and fifty single copies of the gospels, besides multiplication tables and other works.

Since the death of Mr. Alston, on the 20th of August, 1846, the Glasgow press has almost ceased to work. A few of the volumes have been reprinted. It is at present engaged in reprinting the *Gospel of St. John* and the *Acts of the Apostles*. Since 1837, it has been almost the only press that has supplied England, Ireland, and Scotland with embossed books in Roman type. These books are typographically well executed, and the jury think Mr. Alston and the Glasgow press are deserving of great praise. The objections, however, to the small Roman capitals, in which most of the books are printed, are such that it is to be hoped that ere long this press will follow the example of that at Philadelphia, and adopt Howe's typography. It has generally been supposed that the Glasgow press was the only one in Great Britain that printed anything of consequence in the common letter. But we cannot omit to mention a valuable work that has come under our notice; it is a *Magazine for the Blind*. London; Simpkin, Marshall and Co., Stationers'-court; price 6*s.*; in twelve monthly parts. 1839-40. After two volumes were printed, the first magazine for the blind in this country was discontinued. It is in

quarto form, and has twenty-three lines on a full page. The type is the ordinary mixture of the upper and lower-case of Roman letter, and the work is beautifully printed. The first volume contains seventy-eight pages, and the second seventy-three. It is to be regretted that so valuable a contribution to the literature of the blind should not have found better support. It consists of miscellaneous information, with fragments of authors, poetry, anecdotes, woodcuts, &c. In 1806, an institution for the blind was established at Stockholm, and it is with pleasure that we learn that Mr. Watts, of Crown-court, London, has, at the expense of the British and Foreign Bible Society, printed in relief, with the ordinary Roman type, in capitals and lower-case, the *Gospel according to St. Luke*, in Swedish, for this institution. The volume was printed in 1848, and is a beautiful specimen of embossed typography. It is in quarto, consisting of 132 pages, twenty-seven lines on a page of seventy square inches. Price, as sold by the Bible Society, at cost, 6*s.*; 500 copies were printed.

In France, Belgium, Prussia, Austria, Switzerland, Sweden, and the United States, the Roman lower-case alphabet is used. In most, if not all, of these countries, the institutions for the blind are supported and partially controlled by government, and perhaps this is the reason why, in all of them nearly, the same system of typography prevails. In Great Britain, however, the case is different. There are now five entirely different systems of typography in use here, and vigorously pressed upon the benevolent public. The unfortunate blind are thus deprived of the advantages they might have, if harmony of action and uniformity of typography were adopted. This diversity of opinion is causing great injustice to them, and the jury cannot but urge upon the parties concerned the speedy adoption of some one system throughout the country. Our opinion is decidedly in favour of Howe's American typography. Perfection is not claimed for this system, but it seems to us that there are fewer objections to it than to any of the others, and it may be the more easily improved; but any one of the five principal systems now used in England is far better than so many. The present state of printing in the Roman character in Great Britain, is, as we have seen already, that every press has been stopped, while the books in arbitrary characters seem to be increasing and gaining public favour. The principal of these is one known as Lucas's. It was devised by T. M. Lucas, of Bristol, about the year 1835. It consists of arbitrary characters, and is said to be founded on Byron's system of stenography. It is simple, speedily learned, and easily read by the touch, and is generally acknowledged to be, of all the arbitrary systems, the best. The printing on this system began at Bristol, and the following are the works published there:—1. *The Gospel according to St. John*, edited by T. M. Lucas, inventor of the system for teaching the blind to read by embossed stenographic character; July, 1837; Bristol: in 4to, sixty-six pages, and twenty-seven lines to a page. Two pages are pasted together.—2. *The Acts of the Apostles* (according to the authorised version), in T. M. Lucas's embossed stenographic character; 1838. Published under the direction of the Bristol Society for Embossing and Circulating the Authorised Version of the Bible for the use of the Blind; Bristol; in 4to, 118 pages, twenty-seven lines on a page.—(This second publication of Mr. Lucas was announced as containing some improvements: as widening the spaces and lessening the abbreviations.)—3. *The Gospel according to St. Matthew* (according to the authorised version), in T. M. Lucas's embossed stenographic character, 1839; published, &c.; Bristol; 4to, 116 pages.—(In this third publication is announced the firm conviction that this system will prevail over any other plan, on account of its tangibility.)—4. *The Gospel according to St. Mark*, &c.; Bristol, 1840; 4to, seventy-one pages. The above, with the exception of a few small elementary works, are, we believe, all that appeared at Bristol. In the year 1839, a society was formed, called "The London Society for Teaching the Blind to Read." They adopted Lucas's